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ABSTRACT

A two-stage nationwide mail survey of medical school graduates of 1965 was designed to provide health planners with better and more current information on physician location determinants. Presented are the findings of that survey that specifically address the problems of identifying location decision factors that seem to differentiate physicians who choose a rural practice location from those who choose an urban one. The survey focuses attention on primary care physicians, acknowledges the potential importance of a complex of personal, professional, and social factors in the location decision, and investigates the role of the wife. Two surveys are reported. The initial survey of graduates of 1965 reaffirmed the importance of place of rearing in a physician's choice of practice location. A follow-up survey designed to examine certain decision influences in detail revealed the incentives needed to attract physicians not only to a particular community, but to rural areas in general. Results indicate that, while rural physicians for the most part choose their location out of preference for rural as opposed to urban areas, the urban physicians in the sample base their choice as often as not on considerations independent of such a preference. (Author/KE)

CHOICE OF LOCATION OF PRACTICE OF MEDICAL SCHOOL GRADUATES: ANALYSIS OF TWO SURVEYS

PREPARED FOR THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

KAREN A. HEALD
JAMES K. COOPER
SINCLAIR COLEMAN

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PREFACE

This study is the final report to the Department of Health, Education, and Welfare under Contract HEW-OS-71-125, on work conducted for that agency between 1971 and 1973. The purpose of Rand's work under this contract has been threefold: to identify factors underlying the unequal distribution of physicians, to determine policy-relevant factors in a physician's location decision, and to suggest methods for correcting the relative deficiency of physician manpower in rural areas.

An annotated bibliography of the relevant literature was presented in an earlier Rand report, R-966-HEW, *An Annotated Bibliography on Rural Medical Care*, April 1972.

Dr. James K. Cooper, project director for the study, is no longer with The Rand Corporation; he is currently in the Office of Policy Development and Planning, Office of the Assistant Secretary for Health, Department of Health, Education, and Welfare.

SUMMARY

To provide health planners with better and more current information on physician location determinants, a two-stage nationwide mail survey of medical school graduates of 1965 was designed and conducted in cooperation with the American Medical Association. This report presents the findings of that survey and specifically addresses the problem of identifying location decision factors that seem to differentiate physicians who choose a rural practice location from those who choose an urban one. Furthermore, the survey focuses attention on primary care physicians; acknowledges the potential importance of a complex of personal, professional, and social factors in the location decision; and investigates the role of the wife. The analysis presented here is for the most part descriptive. A preliminary decision model of physician location was developed, and the survey data are now undergoing further analysis to examine the sensitivity of this model to different interpretations of the responses to the survey.

INITIAL SURVEY

The results of the initial survey of graduates of 1965 reaffirm the importance of place of rearing in a physician's choice of practice location: the rural-reared respondent is three times as likely to choose a rural practice as an urban-reared respondent. Climate and geographic considerations seem the most pervasive of stated decision influences. Professional considerations, such as clinical support, contact with other physicians, and partnership or group practice options, emerge as relatively important influences, certainly more amenable to policy planning than climate. A preference for urban or rural living also rates high among decision influences.

The overwhelming majority of wives indicate the importance of their husbands' desires and career in the location decision. Climate and geography and a preference for urban or rural living also are important considerations for wives.

Multiple regression analysis was performed to determine which background characteristics and stated decision influences of the physician and his wife are important in differentially producing rural or

urban physicians. The most important explanation of a rural versus an urban practice location is the physician's place of rearing. Citing high medical need in the area, community recruitment efforts, the prospect of being influential in community affairs, and the opportunity to join a desirable partnership or group practice are strong predictors of a physician's choice of rural practice. Having trained nearby and having the opportunity for regular contact with a medical school or medical center are strong predictors of a physician's choice of an urban location. Similarly, shopping opportunities for the wife and her preference for urban or rural living are significant predictors of urban and rural locations, respectively.

FOLLOW-UP SURVEY

A follow-up survey was designed to examine certain decision influences in detail to reveal the incentives needed to attract physicians not only to a particular community, but to rural areas in general. The survey was directed to those primary care physicians from the original survey who are practicing in rural areas and to those practicing in urban areas who indicated on the original survey that they seriously considered a rural practice.

The results indicate that, while rural physicians for the most part choose their location out of a preference for rural as opposed to urban areas, the urban physicians in the sample base their choice as often as not on considerations independent of such a preference. Of concern to the urban physician is professional support (e.g., a nearby hospital, specialists for consultation, and group practice) and fear of professional isolation. The view of medical school training as a deterrent to rural practice has not been supported by the data. However, what little effect the training has on urban physicians is discouraging to nonspecialized, rural practice. Both urban and rural physicians in the sample find group practice very attractive; twice as many physicians prefer group practice as partnership and solo practice combined. Small groups within 15 minutes of a hospital are preferred by both groups of physicians; urban and rural physicians more frequently prefer single- and multi-speciality groups, respectively.

ACKNOWLEDGMENTS

The authors are indebted to Dr. Michael Samuels of the Department of Health, Education, and Welfare for his extensive contributions to the design of both survey instruments and the analysis of survey data.

In addition, we gratefully acknowledge the cooperation of the Department of Survey Research and the Council on Rural Health of the American Medical Association in conducting the original survey of graduates of 1965, especially the invaluable assistance of Mr. James Haug, Ms. Carolynn Steinwald, and Dr. Bond Bible.

We would also like to thank several members of the Rand staff: Cheryl Jackson, who handled the data processing and programming of the follow-up survey; Kay Hogue, who supervised the distribution and collection of the follow-up survey; and Joseph Newhouse and Charles Phelps, who reviewed an earlier draft of this report.

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I. INTRODUCTION

Rand's study of physician distribution conducted for the Department of Health, Education, and Welfare began with three objectives:

- To identify in the available literature factors underlying the unequal distribution of physicians
- To determine through a survey of recent medical school graduates policy-relevant factors important in a physician's location decision, and
- To identify methods for correcting the unequal distribution suggested by the results of such a survey.

The first objective was partially accomplished in the first year of the study by a comprehensive review of the literature on rural health conditions, manpower supply projections, and previously identified factors influencing physician location.* While it is not the primary purpose of this report to examine in depth the problem of physician maldistribution, it may be helpful to examine briefly the outstanding conclusions of the literature reviewed in this area in order to understand the context of the analyses conducted in addressing the latter two objectives.

OVERVIEW OF RURAL HEALTH

The health conditions existing in rural areas are an important component of the state of the nation's health care delivery system. A number of studies have indicated the severity of these conditions. For example, (a) there is a higher proportion of people with disabling chronic disease living in farm areas than anywhere else in the nation;[1] (b) there is a greater number of bed disability days suffered per person per year in nonmetropolitan areas;[1] (c) although there is virtually no difference in the overall infant mortality rates of urban and rural areas, all U.S. counties in 1968 with infant mortality rates double that of the national average were nonmetropolitan;[2] (d) the accident fatality rate in farming is higher than any other occupation

*See Karen A. Heald and James K. Cooper, *An Annotated Bibliography on Rural Medical Care*, The Rand Corporation, R-966-HEW, April 1972.

except mining and construction;[3] and (e) the lack of emergency care services in rural areas has resulted in a greater loss of "salvageable" cases from rural automobile accidents.[4]

The evidence just cited suggests that rural residents are not healthier than urban residents. Yet their utilization of medical services is lower. Although the cause of this discrepancy lies at least partially in economic factors, availability of medical services may be central to the problem. Figure 1 demonstrates the disparity in the distribution of physicians in the United States. The number of active physicians in direct patient care per 100,000 population varies from 192 in the largest metropolitan counties to 42 in some rural counties. These figures represent all specialties, i.e., general practice, primary care, and other specialties. If general practitioners are removed from the count the discrepancy is more pronounced: 164 specialists per 100,000 population in the largest metropolitan counties to 8 specialists in the most rural counties.[5]

Moreover, the rural/urban disparity in physician supply apparently is increasing. Rural doctors are older than urban doctors, so they are retiring and dying at a faster rate, and they are not being replaced. A little over 6 percent of all U.S. medical school graduates in the combined classes of 1963, 1964, and 1965 have now located in nonmetropolitan counties of less than 50,000.* But such counties represent 19 percent of the national population.[5] It is evident that the unequal distribution of physicians is not correcting itself. If health planners are to develop programs that might encourage physicians to locate their practice in more rural areas, they must first understand the factors that enter into a physician's location decision.

FACTORS INFLUENCING PHYSICIAN LOCATION

The important influences in a physician's choice of a practice location have been repeatedly investigated, and many factors have already been identified. These factors can be classified into three groups: background or personal influences, professional considerations, and community characteristics.

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*Data derived from a personal communication from J. N. Haug, former Director of the Department of Survey Research, American Medical Association, January 19, 1972.

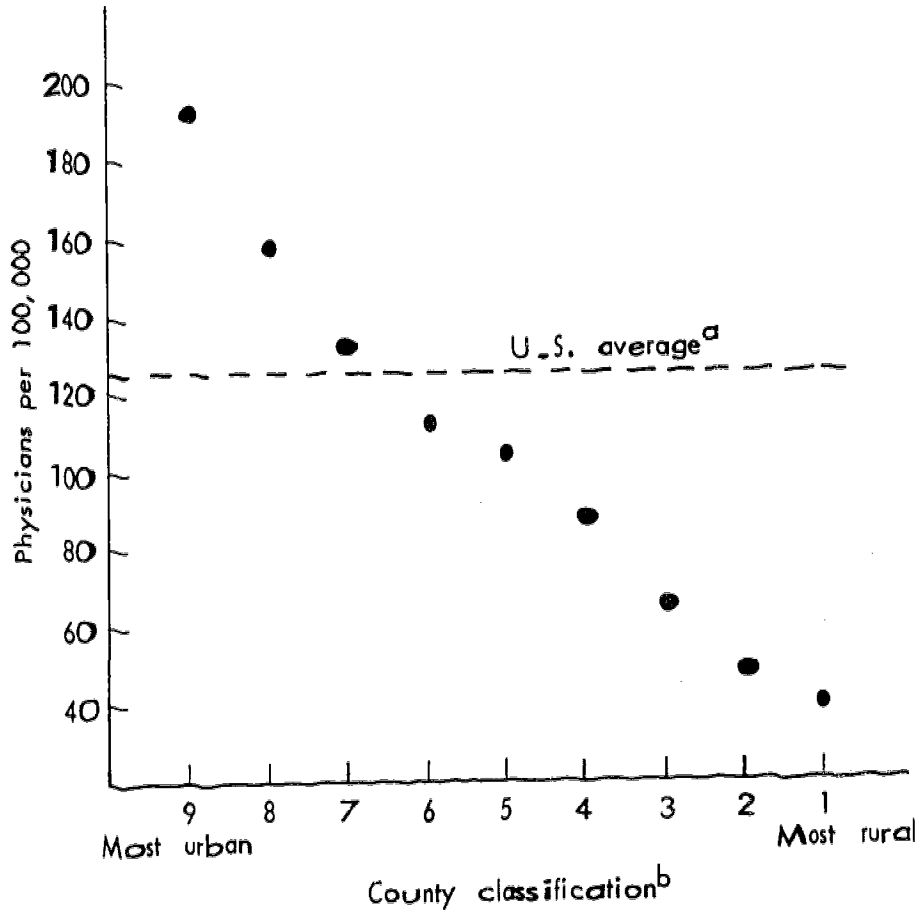

Fig. 1 — Nonfederal physicians in the United States in direct patient care per 100,000 population, 1970

SOURCE: J.N.Haug, G.A.Roback, and B.C.Martin, "Distribution of Physicians in the United States, 1970", American Medical Association, Chicago, 1971, p. 7.

[a] The average physician/population ratio for the entire United States in 1970 was 124 nonfederal physicians in direct patient care per 100,000 population.

[b] According to AMA county classifications, where category 9 counties are the most urban and category 1 counties, the most rural.

The best documented of the background influences on a physician's location decision is place of rearing. Practice in a small community is more likely to be chosen by physicians who grew up in small communities than by those who did not.[6-11] Indeed, nearly one-half of the physicians who practice in towns of less than 2,500 population are from towns of similar size.[6] Related to this hometown influence is the importance of family and friends, often cited by both urban and rural physicians as an important influence on their practice location.[6, 8, 12, 13] One family member of special significance is probably the physician's spouse.[9] Wives of rural physicians, like their husbands, are more likely to have a rural background.[6] However, beyond this simple relationship, the role of the spouse in the decision process is largely unexplored. The location of the physician's medical school, internship, and residency training also seems to influence his practice location: those who train in urban places tend to practice in urban places.[9, 14, 15] Finally, graduate teachers and older physicians affect the practitioner's choice of location,[13] although it is unclear how such influences operate.

Among important professional considerations, group practice is a more attractive option than solo practice to both new and established physicians.[16, 17] However, most group practices are located in urban areas.[18] Fear of professional isolation may prevent some physicians from locating in a rural area; lack of clinical support and lack of free and informal communication with medical peers are cited as important factors deterring physicians from rural practice.[13] In a study of hospitals built in 42 Georgia communities, the presence of a hospital was successful in attracting physicians to their communities; the drawing power was especially strong in rural communities. However, long working hours and the inability to secure uninterrupted free time may be the most foreboding elements of rural practice.[6, 13]

The setting for the practice also seems to affect location choice. To be attractive to a physician, a community must offer him economic security and the resources with which to enjoy his leisure time. A number of studies have related a community's supply of physicians to its economic attraction--in terms of regional per capita income, growth rates, physician income, and median community income.[14, 20-23] In fact,

one of the primary reasons that physicians go into small-town practice is the likelihood of developing a busy practice quickly.[13] In addition, the scarcity of recreational facilities and cultural events is frequently cited by physicians as the factor that deterred them from choosing a rural practice or made them dissatisfied enough to leave their rural practice.[9, 13]

LIMITATIONS OF PREVIOUS STUDIES

Previous physician survey analyses have been characterized by several limitations. The most pronounced of these has been their consideration of the physician population at large as a single group. No distinction has been made, for example, between physicians who made their location decision 30 years ago and those making their decision more recently. It is probable that the factors that influenced the location choice of the two groups are very different.

Second, some studies have distinguished general practitioners from the large pool of physicians as providers of primary, nonspecialized care to the population. But many internists, pediatricians, and obstetricians-gynecologists should also be counted as primary care providers.

Another shortcoming has been that most studies have given the physician a restricted set of factors from which to choose his decision influences. The physician has not had the opportunity to assess simultaneously the influence of various kinds of factors on his location decision, e.g., professional, personal, and community considerations.

Some studies have hypothesized the importance of the physician's spouse in the selection of a practice location. None, however, has explored the role of the spouse in the decision process.

To provide health planners with better and more current information, a survey of recent medical school graduates and their wives was designed. Section II of this report describes the survey and method of analysis. Section III describes the analysis of that survey. Section IV explains the development and presents the results of a follow-up survey to a subsample of the original respondents to explore in greater depth factors affecting physician location.

II. THE RAND-AMA SURVEY AND METHOD OF ANALYSIS

Because of the disadvantages of previous studies, Rand and the American Medical Association (AMA) developed a mail survey directed at recent medical school graduates.* The survey acknowledges the potential importance of a complex of personal and social factors in the location decision, and considers the role of the spouse.

Two questionnaires were sent in spring 1972: one to all 6,978 U.S. medical school graduates of the class of 1965 and one to the wives of married male graduates. For the most part, the physicians in the sample would have completed postgraduate studies and military obligations by 1972 and therefore would be at or near the time of a practice location decision. The primary focus of the survey analysis is a subsample of the original population, those physicians in primary care practice. Primary care practitioners are defined as those physicians who state their specialty as general or family practice, internal medicine, pediatrics, or obstetrics-gynecology and who do not limit their practice to a subspecialty. Because of training requirements, physicians in the sample who planned to specialize were less likely to have decided on a practice location at the time of the survey than those who planned to take up primary care practice. For this reason, it is felt that the reliability of the data is greatly reduced for specialists.

At three-week intervals, two follow-up requests were sent to nonrespondents. When a predetermined, acceptable level of response was attained (in the present survey, after the third request), requests for responses were terminated.

PHYSICIAN QUESTIONNAIRE

The physician questionnaire (Appendix A) identifies the primary care physicians of concern in our study: (a) those already in active patient care practice; (b) those about to enter active practice who are

*Participation of the AMA in this study consisted primarily of assistance in questionnaire design, endorsement and implementation of the survey, and provision of year-end data on 1965 U.S. medical school graduates. Although the AMA did not participate in the analysis presented in this report, it will participate in future analyses of these data.

at least fairly certain where the practice will be located; and (c) those specializing or intending to specialize in general or family practice, internal medicine, pediatrics, or obstetrics-gynecology and who do not limit their practice to a subspecialty. In addition, the physician is asked to list the place of his rearing and the place of his practice. (These responses are later translated into a demographic county classification along a rural urban continuum.) The physician's exposure to rural practice during medical training is determined according to whether he has participated in a rural preceptorship program or has otherwise had experience in the health care delivery system during his medical education. The approximate point in training at which the physician made a decision regarding the kind of area in which he would locate his practice is also determined.

Finally, urban physicians are asked whether or not they had ever considered rural practice, in order to identify a subsample of physicians that could be questioned further to determine the factors that discouraged them from entering rural practice (see Section IV).

The crux of the survey is contained in the tenth question. Listed are most of the factors that the literature has identified as potentially important in influencing a physician's decision to locate in a particular community. The 26 factors are grouped so that the process of ranking could be simplified to ensure the highest physician response rate (see list in Table 1). The three groups for the most part represent personal, sociocultural, and professional motivations for making a location choice. As an initial step, the physician reads through the list of influences to select those factors relevant to him. After this screening exercise, the physician is asked to rank the top three factors of all those relevant to his decision.

QUESTIONNAIRE FOR SPOUSES

The spouse questionnaire (p. 77) is simplified somewhat by addressing only female spouses.* The initial questions in the wife's questionnaire (as in the physician's) invite responses that outline the wife's background: her age, her educational level, and her place of rearing. For instance, it might be expected that rural physicians would be more likely

*The use of "his" for physician's and "wife" for spouse reflects the 93-percent male majority when the questionnaires were drawn up and is not to be construed as arbitrary stereotyping of physicians as male and spouses as female.

Table 1

FACTORS THAT POTENTIALLY INFLUENCE A PHYSICIAN'S LOCATION CHOICE

Personal Influences

- Income potential.
- Climate or geographic features of area.
- Having been brought up in such a community.
- Payment of "forgiveness loan."
- Influence of wife or husband (her/his desires, career, etc.).
- Influence of family friends
- High medical need in an area.
- Influence of preceptorship program.
- Having gone through medical school, internship, residency, or military service near here.
- Advice of older physician.

Community Factors

- Organized efforts of community to recruit physicians.
- Opportunities for social life.
- Recreational and sports facilities.
- Quality of educational system for children.
- Prospect of being more influential in community affairs.
- Cultural advantages.
- Prosperity of community.
- Preference for urban or rural living.

Professional Considerations

- Availability of clinical support facilities and personnel.
- Availability of good social service, welfare, or home care services.
- Opportunity for regular contact with a medical school or medical center.
- Opportunity for regular contact with other physicians.
- Opportunity to join desirable partnership or group practice.
- Availability of loans for beginning practice.
- Opportunity to work with specific institution.
- Access to continuing education.

to have less educated wives who were raised in rural areas than would urban physicians.

The wife's role in the decision process is the primary concern of this questionnaire. The factors that wives rate as important in the location of their husband's practice--for wives who indicate that they had at least moderate influence on the location choice--should be of value in contemplating special recruitment procedures for wives. The wife is presented with a list of factors that may have attracted her to the community in which her husband decided to practice. The list is quite similar to the list presented to the physician, with the elimination of professional considerations. A comparison of the relative importance of various factors to physicians and to their wives should provide the basis for effective recruiting of physicians and wives.

METHOD OF ANALYSIS

The sample of respondents is described (1) in terms of their background characteristics, (2) through simple tabulations of their responses to the questions in the survey, and (3) through comparisons of those intending to take up an urban practice with those intending to pursue a rural practice. However, it cannot be determined from these comparisons to what extent the factors overlap as explanations of practice location. It may be, for instance, that rural physicians are more likely to be influenced by community recruitment efforts and high medical need in the area than urban physicians--but to what extent is that due to their more rural background? To better understand relationships of this type, it is desirable to know how a factor effects the practice location when all other factors, including background, are held constant. This can be accomplished with multiple regression analysis.*

*Question 10 in the physician questionnaire (see Appendix) asks respondents to indicate which factors were important to them in picking one location over others. The question, as worded, does not distinguish between choices made across different types of areas from choices made among similar locations (i.e., in the sense of the degree of ruralness). Factors that discriminate across different location types are more directly related to the question of what affects rural physician supply. The survey data are undergoing further analysis by Sinclair Coleman in an attempt to take account of this lack of precision in the wording of the question.

If we let L = the type of county in which the physician's practice is located, then the following model may be proposed:

$$L = f\ (P_B,\ P_{DI},\ W_B,\ W_{DA}),$$

where each of the arguments represents a vector of variables.* The vector P_B represents the background characteristics of the primary care physician; P_{DI}, his stated decision influences; W_B, the background characteristics of the physician's wife; and W_{DA}, the stated decision of attractions of the wife.

The measurement of the dependent variable L is based on the AMA's nine-point demographic county classification, in which U.S. counties have been classified as metropolitan or nonmetropolitan and further by population size (see Table 2). Counties in category 1 are the most non-metropolitan, and those in category 9 are the most metropolitan. This classification system offers several advantages. First, it has been developed and used by the AMA's Department of Survey Research, the principal collector of data on physicians, and therefore represents an accepted standard measure of demographic location. Also, it seems to be a more refined scale than others developed in the past. Because of the AMA's cooperation and assistance in conducting the survey, it was possible to translate physician location responses into this demographic county classification scheme.

Table 2
DEMOGRAPHIC COUNTY CLASSIFICATION

Category	Definition
1	Nonmetropolitan counties with 9,999 or fewer inhabitants
2	Nonmetropolitan counties with 10,000 to 24,999 inhabitants
3	Nonmetropolitan counties with 25,000 to 49,999 inhabitants
4	Nonmetropolitan counties with 50,000 or more inhabitants
5	Counties considered potential SMSAs
6	Counties in SMSAs with 50,000 to 499,999 inhabitants
7	Counties in SMSAs with 500,000 to 999,999 inhabitants
8	Counties in SMSAs with 1,000,000 to 4,999,999 inhabitants
9	Counties in SMSAs with 5,000,000 or more inhabitants

There are several possible formulations of the above model. One major choice concerns the use of checked or ranked factors. Item 10 on the physician questionnaire and item 6 on the wife questionnaire both

*W_B and W_{DA} are applicable only for married male graduates.

ask the respondent to check all items important to that person in choosing one location as opposed to others, and then to rank the three most important factors. Arguments can be made both for checked factors and for ranked factors. The latter might be preferred on the belief that the ranked factors are more important, that they may have been marked after more thought on the part of the respondent, and therefore are more reliable (i.e., less error may be introduced in ranking than in checking). On the other hand, it can be argued that no one knows how much thought goes into answering a mailed questionnaire, and therefore validity and reliability are necessarily unknowns. Also, the factor ranked third may differ only marginally in importance from the factor ranked fourth for some respondents, thus introducing bias into the ranked factors.

A second important choice involves general practicioners. There is reason to believe that there are qualitative differences in the kinds of motivations affecting general practitioners (GPs) from those affecting other primary care physicians. There is the choice then of either adding a dummy indicator for GP to the list of independent variables or running separate regressions for the two populations: GPs and non-GPs.

The use of background and influence factors for the wives considerably reduces the sample size in any regression, so the choices discussed above will be made on the basis of comparisons that leave out information on the wives. Regressions using checked and ranked factors but deleting any special considerations of GPs and deleting variables on the wives will be run first. Then the GP choice will be considered, using the best equation from either checked or ranked factors. Finally, the variables for wives will be added to what appears to be the most appropriate form of the model on the basis of the considerations discussed in this section.

III. ANALYSIS OF THE RAND-AMA SURVEY

RESPONSE RATE

The overall response rate to the questionnaire for physicians was exceptionally high for a mail survey, 76.3 percent (see Table 3). There were 5,325 respondents; of this group, 1,161 respondents indicated that they were in or about to be in the practice of primary care medicine and had selected a practice location.

The response rate to the questionnaire for wives was 66.6 percent, with a total of 3,263 out of 4,899 responding. (Only wives of physicians who are in or about to be in practice and have decided on a location were asked to respond.) However, the usable response was lowered to 2,756, or 56.0 percent, since wives whose physician-husband did not respond were eliminated from the sample. Of the matched physician and wife responses, 817 were for wives of primary care physicians, and 531, or 65 percent, of these were wives who perceived at least a moderate influence on the

Table 3

SURVEY COUNTS AND RESPONSE RATES
(percentages in parentheses)

Physician		
Questionnaires mailed	6,978	
Usable responses received	5,325	(76.3)
Physicians who are in or about to be in patient care practice and know location	3,773	
Physicians in or about to be in primary care practice	1,161	
Wife		
Questionnaires mailed (to male physicians)	6,457	
Less physicians who are not in or about to be in patient care practice and those who are about to be in practice but do not know location	- 1,256	
Less physeicians indicating not married	- 302	
Total applicable questionnaires mailed	4,899	
Usable responses received	3,263	(66.6)
Wives with matched physician responses	2,756	(56.0)
Wives of primary care physicians who had at least moderate influence on the decision	531	

location decision.

PHYSICIAN BACKGROUND CHARACTERISTICS

A description of the two samples of respondents, physicians and wives, is provided in the tables presented in this section. The data are derived from both survey responses and biographical information from AMA physician tapes. Minor variations in sample size within the study have occurred because some respondents did not answer all questions.* Except for initial identifying characteristics, only data pertaining to primary care physicians are presented, since these physicians are the primary focus of this study.

As the tables indicate, most of the physicians in the sample (93.4 percent) are male, clearly demonstrating a male predominance in the profession even among recent graduates (Table 4). Virtually the same percentage of men and women are in primary care specialities. However, among primary care specialties, females are slightly over-represented in pediatrics and underrepresented in obstetrics and gynecology (Table 5).

The average age of the physicians in the sample is 33.9 years; the average age of the subsample of primary care physicians is slightly older, 34.2 years (Table 6).

As indicated by the lack of response to a "not married" box, nearly 97 percent of the total sample and of primary care physicians are married (Table 7).

More than one-half of the sample are already in active patient care practice (Table 8). Of those physicians not yet in practice, 60 percent intend to be in active practice within one year; 45 percent already have chosen a practice location (Table 9).

For physicians in the sample in or about to be in active patient care practice, the distribution of specialties, as described by the physician, is displayed in Table 10. Also shown is an indication of whether the physician limits or intends to limit his practice to a subspecialty. Surgery has attracted the largest proportion (20.5 percent) of the physicians in the sample of 1965 graduates; over three-

*Tables are modified to exclude nonresponse counts. The totals and percentages are thereby adjusted. The chi squares and corresponding degrees of freedom and significance levels, where given, however, are sometimes based on the full tables of responses and nonresponses.

Table 4

SEX DISTRIBUTION OF ALL PHYSICIANS IN (OR ABOUT TO BE IN) PRACTICE AND OF PRIMARY CARE PHYSICIANS

Sex	TOTAL MDS		PRIMARY CARE MDS	
	No.	%	No.	%
Male	3533	93.7	1004	93.4
Female	238	6.3	71	6.6
Total	3771	100.0	1075	100.0

Table 5

SEX DISTRIBUTION OF PRIMARY CARE PHYSICIANS, BY SPECIALTY

Sex	General Practice		Internal Medicine		Pediatrics		Obstetrics-Gynecology		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Male	387	94.4	294	93.3	147	88.0	176	96.2	1004	93.4
Female	23	5.6	21	6.7	20	12.0	7	3.8	71	6.6
Total	410	38.1	315	29.3	167	15.5.	183	17.0	1075	100.0

Table 6

AGE DISTRIBUTION OF ALL PHYSICIANS IN (OR ABOUT TO BE IN) PRACTICE AND OF PRIMARY CARE PHYSICIANS

Age	TOTAL MDS		PRIMARY CARE MDS	
	No.	%	No.	%
25-29	3	0.0	0	0.0
30-34	2966	78.7	802	74.6
35-39	596	15.8	193	18.9
40-57	208	5.5	80	7.4
Total	3771	100.0	1075	100.0
Mean	33.9 yrs.		34.2 yrs	

Table 7

MARITAL STATUS OF ALL PHYSICIANS IN (OR ABOUT TO BE IN) PRACTICE AND PRIMARY CARE PHYSICIANS

	TOTAL MDS		PRIMARY CARE MDS	
Marital Status	No.	%	No.	%
Married	3631	96.3	1041	96.8
Not Married	140	3.7	34	3.2
Total	3771	100.0	1075	100.0

Table 8

PRESENT STATUS OF ALL PHYSICIANS IN SAMPLE

Present Status	No.	%
In residency or fellowship training (nonfederal)	1202	23.5
In federal service	772	15.1
In active patient care practice (nonfederal)	2728	53.3
In other professional activity	419	8.2
Total	5121	100.0

Table 9

PRESENT PLANS OF THOSE PHYSICIANS NOT IN ACTIVE PATIENT CARE PRACTICE

	Practice Location Known		Practice Location Unknown		No Practice Plans		Total	
Present Status	No.	%	No.	%	No.	%	No.	%
In residency or fellowship training	601	52.6	228	20.0	314	27.5	1143	100.0
In federal service	351	47.1	102	13.7	292	39.2	745	100.0
In other professional activity	68	17.3	28	7.1	298	75.6	394	100.0
Total	1020	44.7	358	15.7	904	39.6	2282	100.0

Table 10

DISTRIBUTION OF ALL PHYSICIANS IN (OR ABOUT TO BE IN) PRACTICE, BY SPECIALTY AND SUBSPECIALTY

Specialty	Limited to Subspecialty					
	Yes		No		Total	
	No.	%	No.	%	No.	%
General & Family Practice	6	1.3	442	98.7	448	12.5
Internal Medicine	180	34.2	346	65.8	526	14.7
Pediatrics	56	23.7	180	76.3	236	6.6
Obstetrics-gynecology	91	32.0	193	68.0	284	7.9
Surgery	564	76.9	169	23.1	733	20.5
Psychiatry	140	43.3	183	56.7	323	9.0
Radiology	127	45.4	153	54.6	280	7.8
Anesthesiology	70	57.9	51	42.1	121	3.4
Pathology	43	36.8	74	63.2	117	3.3
Other	387	76.2	121	23.8	508	14.2
Total	1664	46.5	1912	53.5	3576	100.0

fourths of the surgeons are limiting their practice to a subspecialty. In contrast, the next highest proportion of physicians (14.7 percent) is in internal medicine; nearly two-thirds of these physicians are not limiting their practice. According to our definition of primary care, there are 1,161 primary care physicians identified in Table 10, one-third of all the physicians in or going into practice from the 1965 class.

Place of Rearing

The strong relationship between the type of place in which the physician was reared and the type of place in which he chooses to practice is shown in Tables 11 and 12. Location is given by county type, with counties organized into nine groups according to population characteristics, as indicated in Table 2.[5] For some tables, location is presented as a dichotomous variable, in which case county groups 1 through 4 represent rural areas; county groups 5 through 9, urban areas. The chi squares in Tables 11 and 12 indicate a significant

Table 11

DISTRIBUTION OF PRIMARY CARE PHYSICIANS, BY PLACE OF REARING AND PLACE OF PRACTICE[a]

ce of ring[b]	Place of Practice[b] 1	2	3	4	5	6	7	8	9	Total
	4[c]	2	5	5	2	10	1	3	4	36
	11.1[d]	5.6	13.9	13.9	5.6	27.8	2.8	8.3	11.1	100.0
	21.1[e]	3.0	5.7	4.8	4.8	4.7	0.8	1.0	3.8	3.3
	4	26	13	10	3	15	9	17	1	98
	4.1	26.5	13.3	10.2	3.1	15.3	9.2	17.3	1.0	100.0
	21.1	39.4	14.8	9.5	7.1	7.0	7.0	5.5	11.0	9.1
	2	10	22	9	1	21	14	16	2	97
	2.1	10.3	22.7	9.3	1.0	21.6	14.4	16.5	2.1	100.0
	10.5	15.2	25.0	8.6	2.4	9.9	10.9	5.2	1.9	9.0
	0	3	8	28	1	15	9	11	2	77
	0.0	3.9	10.4	36.4	1.3	19.5	11.7	14.3	2.6	100.0
	0.0	4.5	9.1	26.7	2.4	7.0	7.0	3.6	1.9	7.2
	1	3	3	0	7	6	4	10	1	35
	2.9	8.6	8.6	00.0	20.0	17.1	11.4	28.6	2.9	100.0
	5.3	4.5	3.4	0.0	16.7	2.8	3.1	3.2	1.0	3.3
	1	10	19	14	5	75	21	31	6	182
	0.5	5.5	10.4	7.7	2.8	41.2	11.5	17.0	3.3	100.0
	5.3	15.2	21.6	13.3	11.9	35.2	16.3	10.0	5.8	16.9
	5	4	6	12	3	17	34	22	6	109
	4.6	3.7	5.5	11.0	2.8	15.6	31.2	20.2	5.5	100.0
	26.3	6.1	6.8	11.4	7.1	8.0	26.3	7.1	5.8	10.1
	1	5	10	13	16	32	18	161	21	277
	0.4	1.8	3.6	4.7	5.8	11.6	6.5	58.1	7.6	100.0
	26.3	6.1	6.8	11.4	7.1	8.0	26.3	7.1	5.8	10.0
	1	3	2	14	4	22	19	38	61	164
	0.6	1.8	1.2	8.5	2.4	13.4	11.6	23.2	37.2	100.0
	5.3	4.5	2.3	13.3	9.5	10.3	14.7	12.3	58.6	15.3
otal	19	66	88	105	42	213	129	309	104	1075
	1.8	6.1	8.2	9.8	3.9	19.8	12.0	28.7	9.7	100.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[a] Chi square equals 711.3 with 81 degrees of freedom; $p < .01$.

[b] According to AMA's demographic county classification, counties in category 1 most rural; counties in category 9, most urban.

[c] Number of respondents.

[d] Row percentage.

[e] Column percentage.

Table 12

DISTRIBUTION OF PRIMARY CARE PHYSICIANS, BY URBAN-RURAL PLACE OF REARING AND PLACE OF PRACTICE[a]

Place of Rearing[b]	Place of Practice[b]		
	Urban	Rural	Total
Urban	640[c] 83.4[d] 80.3[e]	127 16.6 45.7	767 100.0 71.3
Rural	157 51.0 19.7	151 49.0 54.3	308 100.0 28.7
Total	797 74.1 100.0	278 25.9 100.0	1075 100.0 100.0

[a]Chi square equals 12.1 with 1 degree of freedom; $p < .001$.

[b]According to AMA's demographic county classification, counties in categories 1-4 are rural; counties in categories 5-9 are urban.

[c]Number of respondents.

[d]Row percentage.

[e]Column percentage.

relationship between type of place of rearing and type of place of practice; the correlation coefficient is .44 ($p < .01$). The influence of such a background characteristic on location is strongly implied.

Closer examination of Table 12 reveals that 151, or 49 percent of the 308 primary care physicians who were reared in a rural area (county groups 1 through 4) eventually practice in a rural area. However, only 127 primary care physicians reared in an urban area (county groups 5 through 9) eventually practice in a rural area, or 16.6 percent of the urban-reared physicians are attracted to rural areas. The rural-reared medical student is three times as likely to choose rural practice as an urban-reared student.

Specialty

Specialty is also strongly related to choice of practice location (Table 13). Sixty percent of all rural primary care physicians in the sample are general practitioners, while only 31 percent of urban primary care physicians are GPs. Further, 40 percent of all GPs are located in rural areas, while less than 20 percent of non-GPs are located in rural areas. Therefore, GPs are more than twice as likely as non-GPs to choose a rural practice site.

Preceptorships

Tables 14 and 15 are concerned with the influence of participation in a rural preceptorship program on practice location. Few physicians in the sample participated in such programs, but a greater percentage of rural than urban physicians participated. While this positive relationship may indicate a selection bias (e.g., only those intending rural practice enter these programs), rural preceptorships may be providing important exposure of medical students to the positive aspects of rural practice.

Time of Decision

The time during which a physician makes a choice between urban and rural practice is indicated in Tables 16 and 17. Clearly, most physicians decide during their house staff training. Surprisingly, fewer physicians decide during medical school than at any other time (except "other" category). This fact seems to question the alleged negative impact of the medical school experience on choice of a rural practice. In fact, Table 17 shows that among primary care physicians who do choose a rural practice location, a greater proportion decide before or during medical school than those who choose an urban location.

Table 18 shows that a good proportion of physicians who finally locate in urban areas at least seriously considered rural practice. These physicians represent an important segment of the physician population for they offer an appropriate subsample for investigation of deterrents to rural practice.*

*See Section IV for a more detailed discussion.

Table 13

URBAN-RURAL DISTRIBUTION OF PRIMARY CARE PHYSICIANS, BY SPECIALTY[a]

Specialty	Place of Practice[b]		
	Urban	Rural	Total
General practitioner	260[c]	171	431
	60.3[d]	39.7	100.0
	31.0[e]	59.4	38.2
Non-general practitioner	579	117	696
	83.2	16.8	100.0
	69.0	40.6	61.8
Total	839	288	1127
	74.4	25.6	100.0
	100.0	100.0	100.0

[a] Chi square equals 73.1 with 1 degree of freedom; $p < .001$.

[b] According to AMA's demographic county classification, counties in categories 1-4 are rural, counties in categories 5-9 are urban.

[c] Number of respondents

[d] Row percentage.

Table 14

PARTICIPATION IN RURAL PRECEPTORSHIP PROGRAM

Participation	Total MDs		Primary Care MDs	
	No.	%	No.	%
Yes	485	13.0	187	16.2
No	3243	87.0	970	83.8
Total	3728	100.0	1157	100.0

Table 15

RELATIONSHIP BETWEEN PARTICIPATION IN RURAL PRECEPTORSHIP PROGRAM AND PLACE OF PRACTICE FOR PRIMARY CARE PHYSICIANS

	Place of Practice					
	Urban		Rural		Total	
Participation	No.	%	No.	%	No.	%
Yes	107	12.8	71	32.7	178	15.8
No	729	87.2	217	67.3	946	84.2
Total	836	100.0	288	100.0	1124	100.0

[a]Chi square equals 10.0 with 1 degree of freedom; $p < .01$

Table 16

TIME OF DECISION FOR ALL PHYSICIANS AND PRIMARY CARE PHYSICIANS

Time of Decision	Total MDs		Primary Care MDs	
	No.	%	No.	%
Before medical school	492	13.3	157	14.2
During medical school	276	7.5	117	10.6
During internship, residency, other house staff	1995	54.1	509	45.9
During military service	693	18.8	244	22.0
Other	233	6.3	82	7.4
Total	3689	100.0	1109	100.0

Table 17

RELATIONSHIP BETWEEN TIME OF DECISION AND EVENTUAL PRACTICE LOCATION FOR PRIMARY CARE PHYSICIANS [a]

Time of Decision	Place of Practice[b]					
	Urban		Rural		Total	
	No.	%	No.	%	No.	%
Before medical school	102	12.4	55	19.3	157	14.2
During medical school	67	8.1	50	17.5	117	10.6
During internship, residency, other house staff	417	50.6	92	32.2	509	45.9
During military service	174	21.1	70	24.5	244	22.0
Other	64	7.8	18	6.3	82	7.4
Total	824	100.0	285	100.0	1109	100.0

[a] Chi square equals 42.2 with 4 degrees of freedom: $p < .001$.

[b] According to AMA's demographic county classification, counties in categories 1-4 are rural, counties in categories 5-9 are urban.

Table 18

URBAN PHYSICIANS WHO SERIOUSLY CONSIDERED RURAL PRACTICE

Considered Rural Practice	Total MDs		Primary Care MDs	
	No.	%	No.	%
Yes	1195	44.3	327	48.7
No	11504	55.7	342	51.3
Total	2699	100.0	672	100.0

WIFE BACKGROUND CHARACTERISTICS

The responses of over 2,700 wives for whom there were matching physician responses are presented below. A large percentage of these wives and of the subsample of 531 wives of primary care physicians are between the ages of 26 and 35 years (Table 19). The mean age of all wives and of primary care wives is 31 years.

Nearly one-half of all wives and of primary care wives have college degrees; over 10 percent have a postgraduate degree. All but about 5 percent have had some college (Table 20).

Table 21 shows the strong relationship between the wife's place of rearing and the primary care physician's place of practice. The correlation coefficient is .38 ($p < .01$). However, a closer look at the data shows that among the 144 rural primary care practitioners for which we have data for the wife, 63 (43.8 percent) are married to women raised in a rural area. Of the 357 urban practitioners, 293 (82.1 percent) are married to urban-reared women. Urban practitioners are evidently twice as likely to marry someone of an urban background as rural practitioners are to marry someone of a rural background. The importance of convincing the wife, especially if she is unfamiliar with small-town living, should be recognized in community recruitment efforts.

STATED DECISION INFLUENCES OF PHYSICIAN

Both the physicians and the wives in the survey sample are presented with a list of considerations that might have affected their selection of a practice location. From these lists respondents check and then rank those considerations, or factors, that are especially important to them. As pointed out in Section II, the choice between using checked or ranked responses in any presentation or analysis cannot be made on the basis of theoretical considerations. But the judgment of the relative benefit of one or the other response type can be based on the amount of variance that either can explain in a regression of background and stated influence factors on practice location. The use of checked factors results in a higher predictive ability for the regression equation (adjusted R^2 of .450 versus adjusted R^2 of .319 for ranked influences). In other words, checked responses seem to give

Table 19

AGE DISTRIBUTION OF WIVES

Age	Wives of all MDs		Wives of Primary Care MDs	
	No.	%	No.	%
20 or less	2	0.1	0	0.0
21 - 25	90	3.3	12	2.5
26 - 30	1176	43.3	205	39.0
31 - 35	1262	46.5	258	49.0
36 - 40	147	5.4	41	7.8
41 - 45	29	1.1	6	1.1
46 - 50	6	0.2	3	0.6
51 - 55	4	0.1	0	0.0
Total	2716	100.0	526	100.0
Mean	31.0 yr		31.3 yr	

Table 20

LEVEL OF EDUCATION OF WIVES

Level of Education	Wives of all MDs		Wives of Primary Care MDs	
	No.	%	No.	%
High school graduate or less	128	4.8	39	7.7
Some college	804	30.4	171	33.2
College graduate	1315	49.7	237	46.9
Postgraduate degree	401	15.1	58	11.5
Total	2648	100.0	505	100.0

Table 21

DISTRIBUTION OF PRIMARY CARE WIVES' PLACE OF REARING AND PHYSICIANS' PLACE OF PRACTICE[a]

Place of Rearing[b]	Place of Practice[b] 1	2	3	4	5	6	7	8	9	Total
1	4[c]	0	1	2	0	1	2	4	0	14
	28.6[d]	0.0	7.1	14.3	0.0	7.1	14.3	28.6	0.0	100.0
	50.0[e]	0.0	2.0	3.7	0.0	1.0	3.5	2.8	0.0	2.8
2	0	7	6	3	2	3	7	5	1	34
	0.0	20.6	17.6	8.8	5.9	8.8	20.6	14.7	2.9	100.0
	0.0	21.9	12.0	5.6	8.3	3.1	12.3	3.5	2.7	6.8
3	2	2	10	9	5	11	3	5	0	47
	4.3	4.3	21.3	19.1	10.6	23.4	6.4	10.6	0.0	100.0
	25.0	6.3	20.0	16.7	20.8	11.2	5.3	3.5	0.0	9.4
4	0	2	4	11	0	7	3	5	0	32
	0.0	6.3	12.5	34.4	0.0	21.9	9.4	15.6	0.0	100.0
	0.0	6.3	8.0	20.4	0.0	7.1	5.3	3.5	0.0	6.4
5	0	2	3	2	3	3	2	5	0	20
	0.0	10.0	15.0	10.0	15.0	15.1	10.0	25.0	0.0	100.0
	0.0	6 6.3	6.0	3.7	12.5	3.1	3.5	3.5	0.0	4.0
6	1	8	7	8	3	32	8	13	1	81
	1.2	9.9	8.6	9.9	3.7	39.5	9.9	16.0	1.2	100.0
	12.5	25.0	14.0	14.8	12.5	32.7	14.0	9.2	2.7	16.2
7	0	2	5	2	3	8	16	9	2	47
	0.0	4.3	10.6	4.3	6.4	17.0	34.0	19.1	4.3	100.0
	0.0	6.3	10.0	3.7	12.5	8.2	28.1	6.4	5.4	9.4
8	0	7	12	10	8	21	9	76	10	153
	0.0	4.6	7.8	6.5	5.2	13.7	5.9	49.7	6.5	100.0
	0.0	21.9	24.0	18.5	33.3	21.4	15.8	53.9	27.0	30.5
9	1	2	2	7	0	12	7	19	23	73
	1.4	2.7	2.7	9.6	0.0	16.4	9.6	26.0	31.5	100.0
	12.5	6.3	4.0	13.0	0.0	12.2	12.3	13.5	62.2	14.6
Total	8	32	50	54	24	98	57	141	37	501
	1.6	6.4	10.0	10.8	4.8	19.6	11.4	28.1	7.4	100.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[a]Chi square equals 375.1 with 81 degress of freedom; p<.01.

[b]According to AMA's demographic county classification, counties in category 1 are most rural; counties in category 9, most urban.

[c]Number of respondents.

[d]Row percentage.

[e]Column percentage.

more information about what kind of factors influence a physician's choice of a rural or urban practice location. Therefore, the results of the survey will be presented here in terms of checked responses. The interested reader can refer to Appendix C for comparable tables using ranked responses.

Most Frequently Checked Influences

Climate and geographic considerations seem the most pervasive of decision influences; 66.7 percent of primary care physicians indicated that they were important (Table 22). However, professional considerations, such a clinical support, contact with other physicians, and partnership or group practice options, emerge as a relatively important block of influences, certainly more amenable to policy planning than is climate. Over 60 percent of all primary care physicians checked *each* of these factors. In addition, the high rating of access to a medical center and continuing education indicates the priority a physician presumably places on preventing professional isolation.

A preference for urban or rural living also rates high among decision influences (checked by 60 percent), yet may be a surrogate for specific attractive or unattractive features of either urban or rural areas--such as pollution, crime rate, provincialism, isolation, simplicity, cosmopolitanism. Recreational and sports facilities and quality education for children are social concerns of physicians that should be considered by the community in its recruitment efforts.

For purposes of comparison, the sample of primary care physicians was broken down by practice location, i.e., urban versus rural (Table 23); by specialty, i.e., general practitioner versus non-general practitioner (Table 24); and by time of decision, i.e., before, during, or after medical school (Table 25).

Comparison between Urban and Rural Primary Care Physicians

Table 23 indicates that the decision considerations of physicians who choose rural locations are quite different from those of physicians who choose urban locations. Although there is strong agreement in the urban and rural physicians' concerns about partnership or group practice

Table 22

FREQUENCY OF FACTORS CHECKED BY PRIMARY CARE PHYSICIANS (N=1161)

Factor	No.	%
Climate or geographic features of area	774	66.7
Availability of clinical support facilities and personnel	769	66.2
Opportunity to join a desirable partnership or group practice	736	63.4
Opportunity for regular contact with other physicians	732	63.0
Preference for urban or rural living	706	60.8
Recreational and sports facilities	619	53.3
Quality of educational system for children	546	47.0
Opportunity for regular contact with a medical school or medical center	542	46.7
Income potential	499	43.0
Access to continuing education	468	40.3
Having gone through medical school, internship, residency, or military service near here	433	37.3
Influence of spouse	431	37.1
Cultural advantages	418	36.0
Having been brought up in such a community	377	32.5
Opportunities for social life	364	31.4
High medical need in area	333	28.7
Prosperity of community	300	25.8
Influence of family or friends	275	23.7
Availability of good social services, welfare, and home care services	166	14.3
Opportunity to work with specific institution	149	12.8
Prospect of being more influential in community affairs	139	12.0
Advice of older physician	138	11.9
Organized efforts of community to recruit physicians	96	8.3
Availability of loans for beginning practice	68	5.9
Influence of preceptorship program	39	3.4
Payment of forgiveness loan	19	1.6

Table 23

FREQUENCY OF FACTORS CHECKED BY PRIMARY CARE PHYSICIANS

Urban Primary Care Physicians (N=839)		
Factor	No.	%
Availability of clinical support facilities and personnel[a]	580	69.1
Climate or geographical features of area	554	66.0
Opportunity for regular contact with other physicians[a]	554	66.0
Opportunity to join a desirable partnership or group practice	535	63.8
Opportunity for regular contact with a medical school or medical center[a]	481	57.3
Preference for urban or rural living[a]	472	56.3
Recreational and sports facilities	433	51.6
Quality of education system for children[a]	419	49.9
Access to continuing education[a]	395	47.1
Having gone through medical school, internship, residency, or military service near here[a]	376	44.8
Income potential	369	44.0
Cultural advantages[a]	367	43.7
Influence of spouse[a]	335	39.9
Opportunities for social life[a]	318	37.9
Having been brought up in such a community	259	30.9
Prosperity of community	228	27.2
Influence of family or friends	212	25.3
High medical need in area[a]	189	22.5
Availability of good social service, welfare, and home care services[a]	145	17.3
Opportunity to work with specific institution[a]	129	15.4
Advice of older physician	100	11.9
Prospect of being more influential in community affairs[a]	80	9.5
Availability of loans for beginning practice	42	5.0
Organized efforts of community to recruit physicians[a]	41	4.9
Influence of preceptorship program[a]	17	2.0
Payment of forgiveness loan[a]	2	0.2

[a]Chi square for differences between urban and rural physicians is significant at the .01 level.

Table 23 (Continued)

Rural Primary Care Physicians (N=288)		
Factor	No.	%
Preference for urban or rural living[a]	214	74.3
Climate or geographic features of area	197	68.4
Opportunity to join desirable partnership orggroup practice	183	63.5
Availability of clinical support facilities and personnel[a]	169	58.7
Recreational and sports facilities	167	58.0
Opportunity for regular contact with other physicians[a]	162	56.3
High medical need in area[a]	134	46.5
Income potential	119	41.3
Quality of education system for children[a]	114	39.6
Having been brought up in such community	109	37.8
Influence of spouse[a]	80	27.8
Prosperity of community	66	22.9
Access to continuing education[a]	57	19.8
Influence of family or friends	56	19.4
Prospect of being more influential in community affairs[a]	55	19.1
Organized efforts of community to recruit physicians[a]	50	17.4
Opportunity for regular contact with a medical school or medical center[a]	46	16.0
Having gone through medical school, internship, residency, or military service near here[a]	44	15.3
Cultural advantages[a]	42	14.6
Opportunities for social life[a]	37	12.8
Advice of older physician	35	12.2
Availability of loans for beginning practice	24	8.3
Influence of preceptorship program[a]	22	7.6
Availability of good social service, welfare and home care services[a]	19	6.6
Payment of forgiveness loan[a]	16	5.6
Opportunity to work with specific institution	15	5.2

[a]Chi square for differences between urban and rural physicians is significant at the .01 level.

FREQUENCY OF FACTORS CHECKED BY GPs AND NON-GPs

General Practitioners (N=442)		
Factor	No.	%
Preference for urban or rural living	283	64.0
Climate or geographical features of area	281	63.6
Opportunity for regular contact with other physicians	264	59.7
Availability of clinical support facilities and personnel[a]	263	59.5
Opportunity to join a desirable partnership or group practice[a]	229	51.8
Recreational and sports facilities	228	51.6
Income potential	196	44.3
Quality of education system for children[a]	187	42.3
High medical need in area[a]	164	37.1
Having been brought up in such a community	158	35.7
Influence of spouse[a]	145	32.8
Access to continuing education[a]	122	27.6
Having gone through medical school, internship, residency, or military service near here[a]	118	26.7
Opportunities for social life[a]	108	24.4
Prosperity of community	106	24.0
Opportunity for regular contact with a medical school or medical center[a]	104	23.5
Cultural advantages[a]	99	22.4
Influence of family or friends	95	21.5
Advice of older physician[a]	74	16.7
Availability of good social service, welfare, and home care services	66	14.9
Prospect of being more influential in community affairs	55	12.4
Organized efforts of community to recruit physicians[a]	52	11.8
Opportunity to work with specific institution[a]	36	8.1
Availability of loans for beginning practice	32	7.2
Influence of preceptorship program[a]	32	7.2
Payment of forgiveness loan[a]	16	3.6

[a]Chi square for differences between general practitioners and non-general practitioners is significant at the .05 level.

Table 24 (Continued)

Non-general Practitioners (N=719)		
Factor	No.	%
Opportunity to join desirable partnership or group practice[a]	507	70.5
Availability of clinical support facilities and personnel[a]	506	70.4
Climate or geographic features of area	493	68.6
Opportunity for regular contact with other physicians	468	65.1
Opportunity for regular contact with a medical school or medical center[a]	438	60.9
Preference for urban or rural living	423	58.8
Recreational and sports facilities	391	54.4
Quality of education system for children[a]	359	49.9
Access to continuing education[a]	346	48.1
Cultural advantages[a]	319	44.4
Having gone through medical school, internship, residency, or military service near here[a]	315	43.8
Income potential	303	42.1
Influence of spouse[a]	286	39.8
Opportunities for social life[a]	256	35.6
Having been brought up in such community	219	30.5
Prosperity of community	194	27.0
Influence of family or friends	180	25.0
High medical need in area[a]	169	23.5
Opportunity to work with specific institution[a]	113	15.7
Availability of good social service, welfare and home care services	100	13.9
Prospect of being more influential in community affairs	84	11.7
Advice of older physician[a]	64	8.9
Organized efforts of community to recruit physicians[a]	44	6.1
Availability of loans for beginning practice	36	5.0
Influence of preceptorship program[a]	7	1.0
Payment of forgiveness loan	3	0.4

[a]Chi square for differences between general practitioners and non-general practitioners is significant at the .05 level.

Table 25

FREQUENCY OF FACTORS CHECKED BY TIME OF PHYSICIANS' LOCATION DECISION

Decided before Medical School (N=159)		
Factor	No.	%
Preference for urban or rural living[a]	118	74.2
Availability of clinical support facilities and personnel	113	71.1
Having been brought up in such a community[a]	111	69.8
Opportunity for regular contact with other physicians	106	66.7
Climate or geographical features of area	99	62.3
Opportunity to join a desirable partnership or group practice[a]	93	58.5
Recreational and sports facilities	88	55.3
Quality of education system for children	77	48.4
Opportunity for regular contact with a medical school or medical center	76	47.8
Opportunities for social life[a]	67	42.1
Access to continuing education[a]	63	39.6
Cultural advantages	57	35.8
Influence of spouse	54	34.0
Income potential[a]	51	32.1
Influence of family or friends	47	29.6
Having gone through medical school, internship, residency, or military service near here[a]	46	28.9
High medical need in area	44	27.7
Prosperity of community	41	25.8
Availability of good social service, welfare, and home care services[a]	28	17.6
Opportunity to work with specific institution	25	15.7
Prospect of being more influential in community affairs	23	14.5
Advice of older physician	19	11.9
Organized efforts of community to recruit physicians	16	10.0
Influence of preceptorship program[a]	8	5.0
Availability of loans for beginning practice	7	4.4
Payment of forgiveness loan	4	2.5

[a]Chi square for differences among times of decision is significant at the .05 level.

Table 25 (Continued)

Decided during Medical School (N=120)		
Factor	No.	%
Preference for urban or rural living[a]	84	70.0
Climate or geographic features of area	77	64.2
Availability of clinical support facilities and personnel	73	60.8
Opportunity for regular contact with other physicians	69	57.5
Opportunity to join desirable partnership or group practice[a]	64	53.3
Recreational and sports facilities	59	49.2
Income potential[a]	52	43.3
Quality of education system for children[a]	51	42.5
Having been brought up in such community[a]	49	40.8
Opportunity for regular contact with a medical school or medical center	45	37.5
Influence of spouse	43	35.8
High medical need in area	39	32.5
Having gone through medical school, internship, residency, or military service near here[a]	38	31.7
Cultural advantages	34	28.3
Access to continuing education[a]	33	27.5
Opportunities for social life[a]	33	27.5
Prosperity of community	27	22.5
Influence of family or friends	25	20.8
Prospect of being more influential in community affairs	20	16.7
Advice of older physician	16	13.3
Influence of preceptorship program[a]	15	12.5
Opportunity to work with specific institution	13	10.8
Availability of good social service, welfare and home care services[a]	7	5.8
Organized efforts of community to recruit physicians	7	5.8
Availability of loans for beginning practice	6	5.0
Payment of forgiveness loan	5	4.2

[a]Chi square for differences among times of decision is significant at the .05 level.

Table 25 (Continued)

Factor	No.	%
Decided after Medical School (N=862)		
Climate or geographical features of area	587	68.1
Availability of clinical support facilities and personnel	571	66.2
Opportunity to join a desirable partnership or group practice[a]	569	66.0
Opportunity for regular contact with other physicians	549	63.7
Preference for urban or rural living[a]	494	57.3
Recreational and sports facilities	466	54.1
Opportunity for regular contact with a medical school or medical center	413	47.9
Quality of education system for children	410	47.6
Income potential[a]	393	45.6
Access to continuing education[a]	363	42.1
Having gone through medical school, internship, residency, or military service near here[a]	343	39.8
Influence of spouse	328	38.1
Cultural advantages	320	37.1
Opportunities for social life[a]	258	29.9
High medical need in area	245	28.4
Prosperity of community	231	26.8
Having been brought up in such a community[a]	212	24.6
Influence of family or friends	198	23.0
Availability of good social service, welfare, and home care services[a]	128	14.8
Opportunity to work with specific institution	110	12.8
Advice of older physician	101	11.7
Prospect of being more influential in community affairs	94	10.9
Organized efforts of community to recruit physicians	73	8.5
Availability of loans for beginning practice	55	6.4
Influence of preceptorship program[a]	14	1.6
Payment of forgiveness loan	10	1.2

[a]Chi square for differences among times of decision is significant at the .05 level.

opportunities and climate or geographic considerations, urban physicians emphasize to a far greater degree such professional factors as clinical support, contact with a medical center, and access to continuing education. The suggested lack or inadequacy of such supportive institutions in rural areas points to the need for programs that free rural physicians from professional isolation. On the other hand, the influences affecting rural physicians are more likely to be personal: a preference for rural living, high medical need, and community recruitment efforts. The influence of the spouse in the decision process is more greatly perceived by urban physicians and may indicate strong aversion on the part of many wives to the idea of rural living.

Comparison between GPs and Non-GPs

Non-GPs appear to be significantly more influenced by professional considerations than their GP colleagues. Clinical support, partnership or group practice opportunities, access to continuing education, and contact with a medical school are indicated more frequently by non-GPs as important in choosing a location. GPs, on the other hand, are relatively more affected by personal influences such as perceived medical need of the area, advice of an older physician, or experience in a preceptorship program. This profile of the GP is understandably similar to that of the rural primary care practitioner, since GPs are more likely than non-GPs to locate in rural areas (see Table 13).

Comparison between Physicians Deciding at Different Times

As for differences in the relative importance of various decision influences at different decision times, it seems that the earlier a physician decides, the more he is affected by such personal factors as a preference for urban or rural living or having been brought up in a similar community. In contrast, those who decide after medical school (clearly the majority of the sample) are concerned with more concrete factors such as partnership or group practice opportunities and income potential.

STATED DECISION ATTRACTIONS FOR WIFE

When asked to consider possible factors of importance to them in the practice location decision, an overwhelming majority of wives indicate their husband's desires and career (Table 26). As in the physician's influences, climate and geography and a preference for urban or rural living are also important considerations.

Not surprisingly, the quality of the education system for their children emerges as a strong influence on wives in the sample. The alleged lower quality of schools in poorer, rural districts may account for the greater importance urban wives attach to this factor (Table 27).

The obvious attractions of urban areas are indicated by urban wives, who more often check cultural advantages, opportunities for social life, and shopping opportunities as important considerations in the practice location decision.

Table 26

FREQUENCY OF FACTORS CHECKED BY WIVES OF PRIMARY CARE PHYSICIANS (N=531)

Factor	No.	%
Husband's desires, career, etc.	370	69.7
Climate or geographic features of area	354	66.7
Quality of education system for children	333	62.7
Preference for urban or rural living	306	57.6
Recreation and sports facilities	288	54.2
Family or friends	279	52.5
Cultural advantages	231	43.5
Income potential of husband	187	35.2
Having been brought up in similar community	178	33.5
Shopping opportunities	160	30.1
Access to continuing education	154	29.0
Prosperity of community	133	25.0
Opportunities for social life	125	23.5
Prospect of being more influential in community affairs	71	13.4
Opportunities for your own career	56	10.5
Facilities for out-of-town transportation	53	10.0
Organized efforts of community to recruit MD	50	9.4

Table 27

FACTORS CHECKED BY WIVES OF PRIMARY CARE PHYSICIANS, BY LOCATION

Factor	No.	%
Wives or urban primary care physicians (N=368)		
Husband's desires, career, etc.	256	69.6
Quality of education system for children[a]	247	67.1
Climate or geographic features of area	241	65.5
Family or friends[a]	210	57.1
Recreation and sports facilities	197	53.5
Cultural advantages[a]	191	51.9
Preference for urban or rural living[a]	182	49.5
Income potential of husband	138	37.5
Shopping opportunities[a]	133	36.1
Having been brought up in similar community	121	32.9
Access to continuing education	116	31.5
Opportunities for social life[a]	103	28.0
Prosperity of community	99	26.9
Facilities for out-of-town transportation	45	12.2
Opportunities for your own career	444	12.0
Prospect of being more influential in community affairs	43	11.7
Organized efforts of community totrecruit MD[a]	22	6.0
Wives of rural primary care physicians (N=151)		
Preference for urban or rural living[a]	116	76.8
Husband's desires, career, etc.	107	70.9
Climate or geographic features of area	107	70.9
Recreation and sports facilities	84	55.6
Quality of education system for children[a]	77	51.0
Family or friends[a]	63	41.7
Having been brought up in similar community	50	33.1
Income potential of husband	43	28.5
Cultural advantages[a]	36	23.8
Access to continuing education	34	22.5
Prosperity of community	33	21.9
Organized efforts of community to recruit MD[a]	28	18.5
Prospect of being more influential in community affairs	28	18.5
Shopping opportunities[a]	22	14.6
Opportunities for social life[a]	19	12.6
Opportunities for your own career	12	7.9
Facilities for out-of-town transportation	6	4.0

[a]Chi square for differences between urban and rural wives significant at .01 level.

REGRESSION ANALYSIS

The results summarized above contain simple comparisons of the answers given by 1965 graduates (and their wives) who intend to practice primary care medicine in rural places with those given by graduates who intend to practice in urban places. As discussed in Section II, multiple regression analysis is used to examine the extent to which these factors overlap in affecting a physician's location choice.

Table 28 presents the results of all the regression equations based on alternative specifications of the independent variables and the physician population. In this table, each column represents a separate regression equation; each row contains the estimated regression coefficients, and their corresponding t values, for a particular independent variable. The sign and magnitude of the regression coefficient reflect the direction and importance of a unit change of that independent variable on practice location. Scales for all independent variables except place of rearing and age are dummy, 0-1, scales. Since higher values of the dependent variable represent more urban locations, a positive sign indicates a relationship of the independent variable to a choice of a more urban practice location; a negative sign indicates the variable is predictive of a more rural practice choice.

Regression 1 estimates the relationship of primary care physicians' background characteristics and checked decision influences to their eventual practice location. Regression 2 adds a dummy independent variable, indicating whether or not the physician is a general practitioner, to the equation. Regression 3 adds the wives' characteristics and decision attractions to the equation as independent variables. Regressions 4 and 5 deal with general practitioners in the sample without and with wife variables, respectively. Likewise, regressions 6 and 7 deal with primary care physicians not in general practice. (Comparable regression results using ranked, instead of checked, decision influences as independent variables are presented in Appendix C.)

Table 28

REGRESSION ANALYSIS OF BACKGROUND CHARACTERISTICS AND CHECKED DECISION INFLUENCE OF PRIMARY CARE PHYSICIANS AND THEIR WIVES ON PRACTICE LOCATION

Independent Variables	All Primary Care MDs			All GPs		All Non-GPs	
	1	2	3	4	5	6	7
Background Characteristics - MD (P_B)							
Place of rearing	.27 (12.35)[a]	.26 (11.80)	.22 (6.05)	.37 (9.48)	.24 (3.57)	.19 (7.10)	.15 (3.36)
Sex (1=female, 0=male)	.18 (.87)	.17 (.84)	.0 (.00)	-.32 (.77)	--	.41 (1.77)	--
Age	.02 (.92)	.03 (1.64)	.04 (1.35	.03 (1.20)	.06 (1.22)	.03 (1.26)	.09 (1.87)
Marital status (1=not married, 0=married)	.47 (1.63)	.46 (1.60	-1.74 (-1.14)[c]	1.06 (1.94)	0.0 (.00)	.15 (.46)	-2.66 (-1.88)[c]
Rural preceptorship	-.34 (-2.36)	-.32 (-2.24)	-.42 (-2.24)	-.15 (-.58)	-.70 (-1.85)	-.42 (-2.39)	-.35 (-.1.37)
GP - non-GP, (1=GP, 0=non-GP)	--[b]	-.36 (-2.98)	--	--	--	--	--
Decision Influences - MD (P_{DI})							
Income potential	.27 (2.51)	.27 (2.51)	-.01 (-.10)	.28 (1.41)	.45 (1.34)	.20 (1.70)	-.25 (-1.44)
Climate, geography	-.20 (-.1.71)	-.21 (-1.79)	-.12 (-.64)	.17 (.75)	.31 (.86)	-.37 (-2.78)	-.14 (-.67)
Raised in such community	-.10 (-.89)	-.09 (-.82)	-.30 (-1.84)	-.17 (-.87)	-.59 (-1.82)	.06 (.44)	-.18 (-.90)
Forgiveness loan	-1.62 (-4.06)	-1.55 (-3.90)	-1.90 (-3.03)	-.77 (-1.49)	-1.32 (-1.51)	2.81 (3.31)	-2.67 (-1.90)
Spouse	.19 (1.76)	.19 (1.77)	.22 (1.53)	.44 (2.17)	.76 (2.61)	.11 (.92)	-.15 (-.92)
Family, friends	-.06 (-.46)	-.05 (-.45)	-.22 (-1.26)	.12 (.50)	-.21 (-.56)	-.15 (-1.09)	-.20 (-1.04)
High medical need	-.53 (-4.45)	-.52 (-4.36)	-.66 (-3.79)	-.60 (-2.95)	-.43 (-1.28)	-.42 (-2.88)	-.63 (-2.94)
Preceptorship	-.06 (-.22)	.04 (.14)	.22 (.52)	.20 (.49)	1.47 (2.15)	0.31 (-.57)	-.41 (-.62)
Training nearby	.60 (5.35)	.58 (5.20)	.50 (3.22)	1.08 (4.78)	1.04 (2.74)	.34 (2.80)	.28 (1.71)
Older physician	.12 (.79)	.17 (1.08)	.16 (.71)	.20 (.77)	-.12 (-.32)	.20 (.98)	.36 (1.13)
Community recruitment	-.61 (-3.12)	-.59 (-3.04)	-.64 (-2.08)	-.50 (-1.61)	-.77 (-1.37)	-.78 (-3.10)	-.88 (-2.23)
Social life	.73 (5.82)	.74 (5.89)	.46 (2.67)	1.03 (4.06)	.49 (1.22)	.54 (3.94)	.25 (1.39)
Recreation, sports	-.34 (-3.00)	-.33 (-2.95)	-.11 (-.66)	-.47 (-2.25)	.00 (.00)	-.25 (-1.96)	-.24 (-1.26)
Education system	.12 (1.14)	.12 (1.10)	-.02 (-.14)	.20 (.97)	-.10 (-.32)	.06 (.47)	.00 (.00)
Influential in community	-.58 (-3.75)	-.61 (-3.94)	-.44 (-2.12)	-.20 (-.70)	.03 (.10)	-.88 (-4.84)	-.84 (-3.40)
Cultural advantages	.57 (4.58)	.54 (4.34)	.35 (1.95)	.21 (.80)	.12 (.30)	.64 (4.84)	.73 (3.78)
Prosperity of community	-.26 (-2.09)	-.26 (-2.13)	-.06 (-.33)	-.33 (-1.39)	-.68 (-1.66)	-.21 (-1.55)	.25 (1.34)
Preference urban/rural	-.51 (-4.83)	-.49 (-4.69)	-.27 (-1.79)	-.74 (-3.72)	-.35 (-1.05)	-.32 (-2.70)	-.22 (-1.36)
Clinical support	-.13 (-1.07)	-.14 (-1.12)	.05 (.28)	.03 (.10)	.40 (1.14)	-.23 (-1.63)	-.25 (-1.23)
Social services	.26 (1.70)	.30 (1.94)	.11 (.49)	.49 (1.72)	.09 (.17)	.20 (1.11)	.09 (.35)
Contact medical center	.85 (6.87)	.75 (5.91)	.64 (3.66)	.45 (1.72)	.34 (.79)	.89 (6.49)	.62 (3.33)
Contact other MDs	-.06 (-.54)	-.05 (-.39)	-.23 (-1.35)	-.05 (-.22)	-.88 (-2.47)	-.07 (-.55)	.14 (.68)
Partnership, group	-.31 (-2.84)	-.36 (-3.22)	-.54 (-3.50)	-.41 (-2.12)	-.47 (-1.55)	-.30 (-2.28)	-.43 (-2.29)
Loan availability	-.07 (-.32)	-.07 (-.33)	-.74 (-2.39)	.07 (.20)	-.33 (-.53)	-.24 (-.90)	-1.16 (-3.10)
Specific institution	.16 (1.00)	.14 (.87)	.10 (.48)	.38 (1.13)	.58 (1.00)	.04 (.24)	-.09 (-.37)
Continuing education	.09 (.72)	.09 (.75)	.00 (.00)	-.03 (-.14)	.60 (1.44)	.17 (1.26)	-.02 (-.14)

Continued

Table 28--Continued

Independent Variables	All Primary Care MDs			All GPs		All Non-GPs	
	1	2	3	4	5	6	7
Background Characteristics - Wife (W_B)							
Place of rearing	--	--	.12 (3.17	--	.10 (1.30)	--	.19 (4.15)
Age	--	--	-.01 (-.48)	--	-.02 (-.59)	--	.00 (.00)
Education level	--	--	.10 (1.33)	--	-.19 (-1.16)	--	.23 (2.85)
Decision Attractions - Wife (W_{DA})							
Family, friends	--	--	.20 (1.30)	--	-.01 (.00)	--	.34 (1.97)
Husband's income	--	--	.23 (1.45)	--	.03 (.10)	--	.39 (2.12)
Climate, geography	--	--	-.05 (-.28)	--	.04 (.10)	--	-.24 (-1.05)
Raised in such community	--	--	.37 (2.29)	--	.62 (1.89)	--	.26 (1.39)
Husband's desires, career	--	--	-.10 (-.65)	--	-.13 (-.45)	--	-.09 (-.49)
Own career	--	--	.49 (2.13)	--	.58 (.98)	--	.31 (1.27)
Continuing education	--	--	-.16 (-1.00)	--	-.34 (-.89)	--	-.13 (-.74)
Community recruitment	--	--	-.22 (-.88)	--	-.53 (-1.05)	--	-.18 (-.59)
Social life	--	--	.26 (1.47)	--	-.26 (-.64)	--	.30 (1.52)
Recreation, sports	--	--	-.23 (-1.37)	--	-.67 (-2.05)	--	.12 (.63)
Shopping	--	--	.69 (4.14)	--	1.11 (3.17)	--	.41 (2.17)
Education system	--	--	.53 (3.31)	--	.41 (1.28)	--	.62 (3.31)
Influential in community	--	--	.00 (.00)	--	.32 (.76)	--	.09 (.36)
Transportation	--	--	.00 (.00)	--	.27 (.49)	--	-.01 (.00)
Cultural advantages	--	--	.11 (.60)	--	.55 (1.40)	--	-.09 (.45)
Prosperity of community	--	--	.03 (.14)	--	.15 (.41)	--	-.10 (-.52)
Preference urban/rural	--	--	-.65 (-.4.41)	--	-.87 (-2.56)	--	-.53 (-3.20)
Constant	3.999	3.801	2.742	2.393	2.670	4.330	0.723
R^2	.465	.470	.601	.467	.655	.422	.618
F	29.27	28.85	12.77	10.70	4.82	14.90	8.29
df	31, 1043	32, 1042	51, 433	31, 378	50, 127	31, 633	50, 256
Adj. R^2	.450	.454	.560	.427	.560	.394	.558

[a]Each column represents a separate regression equation; each row contains the regression coefficients, and their corresponding values in parentheses, for a particular independent variable.

[b]The omission of a particular variable in any regression is indicated by "--" in the table.

[c]The coefficient represents error in the measurement of marital status. Only physicians with corresponding wife responses were used; i.e., no physician in the sample used should be "not married."

General Results

Among all the regression analyses, certain variables are consistently significant.* (Table 29 summarizes from Table 28 the significant variables in each regression.) The physician's place of rearing is the one background characteristic that emerges as a strong, significant predictor of location in all equations. As the most highly significant predictor of location, even with all other variables held constant, it not only reaffirms the literature attesting to its importance, but clearly indicates its strong independent contribution to the location decision.

However, place of rearing is not such a dominant influence that it washes out the effect of other variables. If the physician cites the importance of high medical need in the area as an influence on his location decision, that is a good predictor of his entering rural practice. Citing efforts of the community to recruit physicians, the prospect of being influential in community affairs, and the opportunity to join a desirable partnership or group practice are also consistently related to the choice of a rural practice location (although the first two variables are not significant for GPs). On the other hand, citing having gone through some stage of his medical training nearby or the opportunity for regular contact with a medical school or medical center is strongly related to a physician's choice of an urban practice location. (GPs again are the exception for the latter variable.)

Comparison between GPs and Non-GPs

There is reason to believe that there are qualitative differences in the kinds of motivations affecting GPs from those affecting primary care physicians (Table 24). When the first regression is run with the addition of a dummy variable indicating whether the physician was a GP (regression 2), the dummy variable enters the equation with a significant, negative regression coefficient. Variables significant in the first regression remain so, with very similar coefficients and t values.

*It was recognized that multicollinearity of some of the independent variables was possible. We can get a rough indication of this by looking at the simple correlations. A review of the correlation matrix revealed that, while some correlations among independent variables were statistically significant, none was more than |.49| and most were less than |.20|.

Table 29

SUMMARY OF REGRESSION RESULTS

Independent Variables	Regression No.						
	1	2	3	4	5	6	7
Background Characteristics, MD (P_B)							
Place of rearing	(+)[a]	(+)	(+)	(+)	(+)	(+)	(+)
Sex							
Age							
Marital status							
Rural preceptorship	(-)	(-)	(-)			(-)	
GP/non-GP	*[b]		*	*	*	*	*
Decision influences, MD (P_{DI})							
Income potential	(+)	(+)					
Climate, geography						(-)	
Raised in such community							
Forgiveness loan	(-)	(-)	(-)			(-)	
Spouse				(+)	(+)		
Family, friends							
High medical need	(-)	(-)	(-)	(-)		(-)	(-)
Preceptorship					(+)		
Training nearby	(+)	(+)	(+)	(+)	(+)	(+)	
Older physician							
Community recruitment	(-)	(-)	(-)			(-)	(-)
Social life	(+)	(+)	(+)	(+)		(+)	
Recreation, sports	(-)	(-)		(-)			
Education system							
Influential in community	(-)	(-)	(-)			(-)	(-)
Cultural advantages	(+)	(+)				(+)	(+)
Prosperity of community	(-)	(-)					
Preference urban/rural	(-)	(-)		(-)		(-)	
Clinical support							
Social services							
Contact medical center	(+)	(+)	(+)			(+)	(+)
Contact other MDs					(-)		
Partnership, group	(-)	(-)	(-)	(-)		(-)	(-)
Loan availability			(-)				(-)
Specific institution							
Continuing education							

Table 29 (Continued)

Independent Variables	Regression No.						
	1	2	3	4	5	6	7
Background characteristics, wife (W_B)	*	*	(+)	*		*	(+)
Place of rearing	*	*		*		*	
Age	*	*		*		*	(+)
Education level							
Decision attractions, wife (W_{DA})							
Family, friends	*	*		*		*	(+)
Husband's income	*	*		*		*	(+)
Climate, geography	*	*		*		*	
Raised in such community	*	*	(+)	*		*	
Husband's desires, career	*	*		*		*	
Own career	*	*	(+)	*		*	
Continuing education	*	*		*		*	
Community recruitment	*	*		*		*	
Social life	*	*		*		*	
Recreation, sports	*	*		*	(-)	*	
Shopping	*	*	(+)	*	(+)	*	(+)
Education system	*	*	(+)	*		*	(+)
Influential in community	*	*		*		*	
Transportation	*	*		*		*	
Cultural advantages	*	*		*		*	
Prosperity of community	*	*		*		*	
Preference urban/rural	*	*	(-)	*	(-)	*	(-)

[a]A plus (+) symbol in the column indicates a variable is a significant predictor of urban practice location in that regression; a minus (-) symbol indicates a variable is a significant predictor of rural practice location.

[b]The variable was omitted in the regression.

The addition of this variable adds only a little to the explanatory power of the equation; the adjusted R^2 increases from .450 to .454.

In regressions 4 and 6, the sample of primary care physicians is separated by specialty status (GP or non-GP). A comparison of the individual regression coefficients of the GP and non-GP regression equations shows that the differences between coefficients for many of the individual variables were significant; i.e., there exists an interaction between being a GP and the types of influences that affect the physician's location decision.

For GPs, unlike the other populations, the spouse is a significant perceived influence, and her influence favors the choice of an urban location. Opportunities for social life also influence GPs toward urban locations. Availability of recreational and sports facilities and a preference for rural living are strong predictors of a rural location choice. Non-GPs also seem to be influenced by personal considerations, but of a different kind. Variables such as experience in a rural preceptorship program or a loan forgiveness program, community recruitment efforts, climate and geography, and the prospect of being more influential in community affairs are significant contributors to explaining their rural location choice. Cultural advantages and social life are significant predictors of their urban location choice.*

Comparison of Regression Results with Frequency Tables

Table 23 presents the frequency distribution of decision considerations of urban and rural primary care physicians. The variables on which the two samples differ significantly are variables that are for the most part also significant predictors of an urban or rural location in the regressions. However, there are some exceptions: clinical support, contact with other physicians, quality of the educational system, access to continuing education, and the opportunity to work with a specific institution. These variables are significant differentiators of urban and rural physicians when only a direct relationship is being tested without controlling for other variables. When regression is used to measure their relationship with other variables controlled, those five variables lose their importance; i.e., their contribution to the prediction of location is accounted for by other factors, such as place of rearing. Conversely, the variable "opportunity to join a partnership or group practice" is checked about as often by rural physicians as by urban physicians, yet it shows up as a significant predictor of rural locations in the regressions.

*The sensitivity of the results presented here to various interpretations of the survey questions are now being investigated (see footnote on p.9). Preliminary results show that the results presented in Table 28 are especially sensitive to interpretation differences for the following variables for GPs: medical need in the area, availability of a group

Addition of Wife Variables

When the wife's background characteristics and decision attractions are added to the regression equations (columns 3, 5 and 7 in Table 28), a majority of the significant physician variables remain significant. A few physician variables newly emerge as significant (loan availability for all primary care physicians and non-GPs). In addition, certain wife variables become significant predictors of location. Shopping opportunities, strongly predicting urban locations, and preferences for urban or rural living, strongly predicting rural location, turn up in each of the three regressions. In addition, the wife's place of rearing and her concern for the quality of the education system for the children are significant predictors of an urban location in two of the three regressions.

The percentage of the variance explained by the independent variables increases when the wife variables are included. Because of a lower response rate for wives, the elimination of female physicians and all single physicians, the requirement that both the physician's and the wife's questionnaire be complete, and the rejection from consideration of wives who indicated less than a moderate influence on their husband's location decision, the sample size for consideration is substantially decreased. In addition, a larger list of independent variables was used. Therefore, R^2 can be expected to increase. But, the adjusted R^2 also increases substantially. The adjusted R^2 increases from .450 in regression 1 to .560 in regression 3; similar increases are noted between regressions 5 and 6 and between regressions 7 and 8. Therefore, as a group, the wife variables add to the explanatory power of the regression equation; in addition, some individual variables (e.g., shopping opportunities) are better predictors of location choice than some physician variables and thus replace them as significant predictors in the equation.

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practice, recreational and sports facilities, contact with a medical school or medical center, income potential, and influence of spouse. Access to continuing education is especially sensitive to interpretation differences for non-GPs. For both GPs and non-GPs, the effect of rural preceptorship programs is sensitive to interpretation of the survey questions.

IV. FOLLOW-UP SURVEY OF PRIMARY CARE PHYSICIANS

As stated earlier, one purpose of the current study has been to determine policy-relevant factors that are important in the physician's choice of a place to practice. Toward that end, a primary objective was to develop, implement, and analyze a nationwide survey of young physicians. As indicated in Section II, this survey investigated both demographic and subjective factors related to the decision process. Its findings substantiate previous work of other researchers and suggest that certain factors are more important than previously recognized and need further study.

Specifically, the results of this survey have indicated the importance of such factors as place of rearing, contact with a medical center, training location, community recruitment efforts, partnership or group practice options, and medical need in the area as perceived influences separating rural from urban primary care physicians. The two factors checked most frequently by all primary care physicians were the opportunity to join a partnership or group practice and the climate and geographic features of an area. The identification of the factors that influence physicians' decisions has important policy implications for a community in its efforts to recruit physicians and for government in its efforts to supply physicians to areas of need. Policies that appear promising include: recruiting medical students from rural areas, supporting the establishment of area health education centers in rural areas for clinical support and professional and educational stimulation, and making more partnership and group practice opportunities available in rural areas.*

UNRESOLVED ISSUES

Desirability of Rural Areas

While these factors do influence physicians' decisions, questions still remain unanswered. For example, although we are able to identify the crucial factors in a physician's choice of a particular practice

* Preliminary results of the additional analysis mentioned in footnotes on pages 9 and 44 imply that group practices need to be in rural shortage areas rather than rural areas uniformly to have any impact on the present physician distribution.

location, that information tells us little about the relative desirability of rural and urban areas in general. Moreover, what factors deter physicians from choosing a rural location? What are the unattractive features of urban areas that may be capitalized on in rural recruitment programs? Does a physician really consider all options when choosing a location, e.g., was rural practice ever seriously appraised by urban practitioners, or do all physicians have a narrow range of alternatives?

Influence of Medical School

A second area where questions remain centers on the frequently offered hypothesis that medical school training strongly discourages both nonspecialized medicine and rural practice. The Rand-AMA survey has shown training to be a significant predictor of urban location choice when checked as a decision influence. To shed additional light, data from the present survey were combined with those from a factor analysis of U.S. medical schools performed as part of another Rand project that has investigated the effects of federal programs on academic health centers. Schools were defined along six dimensions, or factors: graduate medical education programs, state/private status, non-MD education programs, reliance on non-fulltime faculty, federal research involvement, and MD education programs. These factors became the basis for a cluster analysis.

The ten different clusters are outlined in Table 30, and the distribution of practice locations for primary care physicians in our sample among the ten clusters is displayed in Table 31. The chi square is significant at the .001 level; clusters 2, 5, 7, and 10 represent medical schools that produced more rural physicians than would be expected by chance. According to their factor scores, these four clusters are clearly state schools with a relatively low emphasis on specialty training programs. We do not know, however, if the relationship between these characteristics and the production of rural practitioners is causal. Table 32 does not support such a causal relationship; the same four clusters that produced more rural physicians also trained more physicians who were raised in rural areas. The strong relationship between place of rearing and place of practice shown in Section II may explain the emergence of the same clusters in

Table 30

MEDICAL SCHOOL ANALYSIS RESULTS: TEN CLUSTERS IN SIX FACTORS (TWO FACTORS GIVEN HALF WEIGHTS)

Cluster #1 (10 schools; m.d. = 1.86)*
Medical College of Wisconsin
Louisiana, New Orleans
Suny, Downstate
Pittsburg
Wayne State
Loma Linda
Northwestern
Hahnemann
Thomas Jefferson
UC-Irvine

Cluster #2 (6 schools; m.d. = 1.17)
Utah
Mississippi
Alabama
Oregon
Arkansas
University of New Mexico

Cluster #3 (14 schools; m.d. = 1.93)
Medical College of Pennsylvania
Georgetown
Albany
Tulane
Saint Louis
Boston
New York Medical
Tufts
Howard
Chicago Medical
Loyola, Chicago
Creighton
George Washington
Meharry

Cluster #4 (6 schools; m.d. = 2.87)
Michigan State
UC-Davis
Puerto Rico
Bowman Gray
Louisiana, Shreveport
Mount Sinai

Cluster #5 (17 schools; m.d. = 1.14)
Maryland
South Carolina
Cincinnati
Ohio State
Louisville
Oklahoma
Missouri
Medical College of Virginia
Temple
University of Virginia
Vermont
University of North Carolina
Texas, Galveston
Iowa
Medical College of Georgia
Nebraska
West Virginia

Cluster #6 (3 schools; m.d. = 2.17)
Medical College of Ohio
Arizona
UC-San Diego

Cluster #7 (10 schools; m.d. = 2.02)
Minnesota
Colorado
Indiana
Tennessee
University of Wisconsin
Illinois
Suny, Buffalo
Texas, Southwestern
UC-San Francisco
University of Michigan

Cluster #8 (10 schools; m.d. = 2.65)
Case Western
New York University
Columbia
University of Pennsylvania
Cornell
Harvard
UC-Los Angeles
Yeshiva, Einstein
University of Washington
University of Southern California

Cluster #9 (10 schools; m.d. = 1.20)
Washington, St. Louis
Yale
Emory
Johns Hopkins
Baylor
Rochester
Duke
Vanderbilt
University of Chicago
Stanford

Cluster #10 (8 schools; m.d. = 1.35)
New Jersey Medical School
Kentucky
Florida, Gainesville
Texas, San Antonio
Suny, Upstate
Kansas
Miami
Pennsylvania State

*The mean distance of schools in each cluster to the centroid of their cluster is denoted by the m.d. in parentheses.

Table 31

PRIMARY CARE PHYSICIANS' PRACTICE LOCATION, BY MEDICAL SCHOOL CLUSTER IDENTIFICATION[a]

Cluster[b]	Practice Location[c]					
	Rural		Urban		Row Total	
	No.	%	No.	%	No.	%
1	31	19.6	127	80.4	158	14.7
2	26	44.1	33	55.9	59	5.5
3	24	14.5	141	85.5	165	15.3
4[d]	3	30.0	7	70.0	10	.9
5	83	32.0	176	68.0	259	24.1
6[d]	0	0.0	0	0.0	0	0.0
7	63	29.9	148	70.1	211	19.6
8	13	16.3	67	83.8	80	7.4
9	18	23.1	60	76.9	78	7.3
10	17	32.1	36	67.9	53	4.9
Column Total	278	25.9	797	74.1	1075	100.0

[a]Chi square equals 37.4 with 9 degrees of freedom; $p < .001$.

[b]See Table 30 for components of clusters.

[c]Defined according to the AMA's nine-point demographic county classification (Table 2).

[d]The low frequency in these rows is attributable to the predominance of newly established (post-1965) medical schools in clusters 4 and 6.

both tables. Does the medical school then have no effect on practice choice? Is it important only in that other factors or characteristics of the physician determine the kind of medical school he selects? If some medical school programs truly encourage rural practice, what steps can be taken to foster such programs?

Group Practice

A third area of the physician decision process only partially resolved is that of partnership and group practice opportunities as a determinant of location choice. Does a partner provide sufficient professional support, or is a group necessary? How prevalent are group practices among primary care physicians? How desirable are they? If

the government, federal or local, should decide to subsidize the establishment of groups in rural areas, what characteristics of a group practice would be considered crucial to the physician?

A more in-depth exploration of the incentives needed to attract physicians -- not only to a particular community, but to nonmetropolitan areas in general -- seemed necessary to answer some of the above questions. Realizing the unique opportunity to learn from our sample of young physicians (primary care practitioners at or near the time of a location decision), a follow-up survey was designed with the following goals in mind:

- To identify factors directing physicians to and away from either metropolitan or nonmetropolitan practice locations.
- To identify factors influencing a physician's practice location that are not specific to a preference for metropolitan or nonmetropolitan areas.
- To determine whether and how medical school training influences practice location choice.
- To identify factors that influence a physician to leave his present practice location.
- To measure the attractiveness of group practice to metropolitan and nonmetropolitan physicians and to determine the parameters of group practice which are most attractive to young physicians.

METHODOLOGY

Again, the AMA was asked to participate in the conduct of the survey. They provided assistance in the design of the survey form and endorsed its administration, but declined further assistance in distribution, collection, and tabulation. All such activities were handled through Rand's Santa Monica Office.

Sample

The follow-up survey was designed in two parts (see Appendixes D and E). One questionnaire is directed toward those primary care physicians from the original survey of 1965 graduates who are practicing

Table 32

PRIMARY CARE PHYSICIANS' PLACE OF REARING BY MEDICAL SCHOOL CLUSTER IDENTIFICATION

Cluster[b]	Place of Rearing					
	Rural		Urban		Row Total	
	No.	%	No.	%	No.	%
1	30	19.0	128	81.0	158	14.7
2	30	50.8	29	49.2	59	5.5
3	21	12.7	144	87.3	165	15.3
4	3	30.0	7	70.0	10	0.9
5	100	38.6	159	61.4	259	24.1
6	0	0	0	0	0	0
7	74	35.1	137	64.9	211	19.6
8	10	12.5	70	87.5	80	7.4
9	16	20.5	62	79.5	78	7.3
10	24	45.2	29	54.7	53	4.0
Column Total	308	28.7	767	71.3	1075	100.0

[a] Chi square equals 79.4 with 9 degrees of freedom; $p < .001$.

[b] See Table 30 for components of clusters.

in nonmetropolitan counties (N=287);* the other questionnaire is directed toward those practicing in metropolitan counties who indicated on the original survey that they seriously considered a rural practice -- UCR (Urban Considered Rural) physicians (N=327). If we can believe that these UCR physicians at one time showed at least passing interest in rural practice, then they may be more susceptible to rural recruitment efforts than other urban physicians. Comparing data on UCRs, other urban physicians, and rural physicians from the original survey, one finds that the UCRs have characteristics somewhat between those of urban and rural physicians (Tables 33-35). More UCRs than other urban physicians were raised in rural areas; more went into general or family practice; more participated in a rural preceptorship program. They may be more open than other urban physicians to various appeals

*Nonmetropolitan counties are those in categories 1 through 4 of the AMA's nine-point demographic county classification, i.e., those outside Standard Metropolitan Statistical Areas (SMSAs). Metropolitan counties, on the other hand, are those in categories 5 through 9, i.e., those within SMSAs or potential SMSAs.

Table 33

DISTRIBUTION OF PRIMARY CARE PHYSICIANS BY PLACE OF REARING, PLACE OF PRACTICE, AND CONSIDERATION OF RURAL PRACTICE

Place of Rearing	Place of Practice					
	Rural		UCR		Other Urban	
	No.	%	No.	%	No.	%
Rural	151	54.3	78	25.2	79	16.2
Urban	127	45.7	231	74.8	409	83.8
Total	278	100.0	309	100.0	488	100.0

Table 34

DISTRIBUTION OF PRIMARY CARE PHYSICIANS BY SPECIALTY, PLACE OF PRACTICE, AND CONSIDERATION OF RURAL PRACTICE

Primary care Specialty	Place of Practice					
	Rural		UCR		Other Urban	
	No.	%	No.	%	No.	%
General or family practice	171	59.4	124	37.9	136	26.6
Internal medicine	59	20.5	100	30.6	174	34.0
Obstetrics-Gynecology	31	10.8	54	16.5	90	17.6
Pediatrics	27	9.4	49	15.0	112	21.9
Total	288	100.0[a]	327	100.0	512	100.0

[a]Totals may not add to 100.0 because of rounding.

Table 35

DISTRIBUTION OF PRIMARY CARE PHYSICIANS BY PARTICIPATION IN RURAL PRECEPTORSHIP PROGRAM, PLACE OF PRACTICE, AND CONSIDERATION OF RURAL PRACTICE

Participation	Place of Practice					
	Rural		UCR		Other Urban	
	No.	%	No.	%	No.	%
Yes	71	24.7	50	15.3	57	11.2
No	217	75.3	276	84.7	453	88.8
Total	288	100.0	326	100.0	510	100.0

to take up a rural practice. The question then becomes one of determining which appeals would be successful. Again from the original survey, UCR physicians seem to check the same kinds of decision influences as other urban physicians, but they check them *more frequently* (Table 36).

The UCR sample complements our focus on rural practitioners by uncovering those factors that influence a potential but neglected source of rural practitioners: physicians who were lost to rural communities because of an overriding lack of certain features, but who may still be attracted at a future time.

Questionnaire Form

Both follow-up questionnaires determine the context of the practice location decision, whether it was based primarily on a preference for metropolitan or nonmetropolitan areas or was relatively independent of such a preference, whether it was a positive or negative choice, and the influences operating in whatever context the decision was made. The answers can be useful to policy planners in developing programs that encourage medical students who prefer nonmetropolitan areas or programs that enhance the attractiveness of particular communities (e.g., group practice opportunities).

Also determined is whether the physician, at the time of his location decision, was choosing among similar kinds of communities (e.g., among nonmetropolitan places) or between nonmetropolitan and metropolitan communities.

Both follow-up questionnaires explore the hypothesized influence of medical school training on a rural practice location; the physician's satisfaction with his present location and, more importantly, reasons for his leaving after a short time; and the availability of group practice opportunities at the time of the practice location decision, the attraction of group practice, and specific group practice characteristics seen as desirable.

RESPONSE RATE

The two questionnaires were mailed in mid-1973; the overall response rate was 63 percent: of 614 questionnaires, 387 usable responses were returned.

Table 36

FREQUENCY OF FACTORS CHECKED BY PRIMARY CARE PHYSICIANS

Factor	Primary Care Physicians					
	Rural (N=288)		UCR (N=327)		Other Urban (N=512)	
	No.	%	No.	%	No.	%
Income potential	119	41.3	142	43.4	227	44.3
Climate, Geography	197	68.4	215	65.7	339	66.2
Raised in such a community	109	37.8	94	28.7	165	32.2
Forgiveness loan	16	5.6	1	0.3	1	0.2
Spouse	80	27.8	158	48.3	177	34.6
Family, friends	56	19.4	84	25.7	128	25.0
High medical need	134	46.5	72	22.0	117	22.9
Preceptorship	22	7.6	5	1.5	12	2.3
Training nearby	44	15.3	153	46.8	223	43.6
Older physician	35	12.2	441	12.5	59	11.5
Community recruitment	50	1714	17	5.2	24	4.7
Social life	37	12.8	125	38.2	193	37.7
Recreation, sports	167	58.0	168	51.4	265	51.8
Education system	114	39.6	174	53.2	245	47.9
Influential in community	55	19.1	30	9.2	50	9.8
Cultural advantages	42	14.6	161	49.2	206	40.2
Prosperity of community	66	22.9	98	28.4	135	26.4
Preference urban/rural	214	74.3	162	49.5	310	60.5
Clinical support	169	58.7	239	73.1	341	66.6
Social services	19	6.6	60	18.3	85	16.6
Contact with medical center	46	16.0	193	59.0	288	56.3
Contact with other physicians	162	56.3	233	71.3	321	62.7
Partnership, group	183	63.5	210	64.2	325	63.5
Loan availability	24	8.3	14	4.3	28	5.5
Specific institution	15	5.2	60	18.3	69	13.5
Continuing education	56	19.8	172	52.6	223	43.6

Making up the total were 194 UCR physicians (a 59.3-percent response rate for this group) and 193 rural physicians (a 67.2-percent response rate), as shown below.

Questionnaires mailed	Number	
Total	614	
UCR	327	
Rural	287	
Usable questionnaires returned		
Total	387	(63.0%)
UCR	194	(59.3%)
Rural	193	(67.2%)

RESULTS

A description of the two samples of respondents is provided in the tables that follow. The data are derived both from responses from the original and follow-up surveys and from biographical information from the AMA physician tapes.

Context of Decision

A majority of all the physicians in the samples based their practice location choice on a preference for either metropolitan or nonmetropolitan areas (Table 37). However, the predominance of such preferences is due largely to rural practitioners, 74 percent of whom decided on such a basis. UCR physicians, as often as not, chose a location independent of a metropolitan/nonmetropolitan preference.

For most physicians who based their location on metropolitan/nonmetropolitan preferences, the choice is due to a combination of positive and negatives features of the two types of areas, although a substantial number of physicians did decide for purely positive reasons (Table 38). The factors most important in attracting rural physicians to rural areas are comfort with the nonmetropolitan life style, lower population density, and recreation and sports features (Table 39). Perceived deterrents to metropolitan locations include high crime rate and dissatisfaction with the metropolitan life style (Table 40).

For UCR physicians, accessibility to cultural activities is the most frequently checked factor attracting them to metropolitan areas (Table 41). Comfort with the life style and environment and spouse's

Table 37

BASIS OF LOCATION CHOICE

Basis	UCR		Rural		Total	
	No.	%	No.	%	No.	%
Between metropolitan and nonmetropolitan	90	47.6	140	73.7	230	60.7
Independent of such considerations	99	52.4	50	26.3	149	39.3
Total	189	100.0	190	100.0	379	100.0

Table 38

DIRECTION OF CHOICE

Direction	UCR		Rural		Total	
	No.	%	No.	%	No.	%
Positive	36	38.3	27	19.7	63	27.3
Negative	2	2.1	20	14.6	22	9.5
Combination	56	59.6	90	65.7	146	63.2
Total	94	100.0	137	100.0	231	100.0

Table 39

FACTORS ATTRACTING RURAL PHYSICIANS TO NONMETROPOLITAN AREAS (N=117)

Factor	No.	%
More comfortable with nonmetropolitan life style and environment	104	88.9
Lower population density	90	76.9
Recreation and sports	74	63.2
High medical need in area	60	51.3
Spouse's preference for nonmetropolitan living	45	38.5
Better education for children	36	30.8
Potential for high initial income	20	17.1
Other	7	6.0

preference for metropolitan living are high ranking personal influences, while regular contact with other physicians and accessibility to a medical center are important professional attractions of metropolitan areas to physicians who move there.

Deterrents to nonmetropolitan areas for UCR physicians are predominantly professional: lack of opportunity for continuing education, possibility of professional isolation, and lack of adequate hospital facilities rank high among factors deterring a physician from choosing a rural area in which to locate (Table 42).

Among the physicians who decide on a practice location independently of metropolitan/nonmetropolitan considerations, a variety of professional and personal factors are checked as important in the decision (Table 43). Nearby hospital facilities and availability of physician specialists are checked most often by all physicians; but nearness to family and friends, geographic features, climate, quality of the education system for the children, and group practice opportunities are also perceived as important factors in their location decision. A group practice opportunity is viewed as important by virtually twice as many physicians as was either partnership or solo practice opportunities. Partnership, checked no more often than solo practice, then must not offer all the support most physicians seek.

Among the rural physicians in our sample, 43 percent indicate that they considered locations different in type (i.e., metropolitan) from the location they chose (Table 44).* A large percentage, approximately 6 out of 7, of those who considered alternative locations actually visited the alternatives.

Influence of Medical School

Unexpectedly, most physicians (over 80 percent), both UCR and rural, GP and non-GP, were not significantly influenced in their location decision by their medical school training (Table 45). Even among those physicians perceiving an influence, the range of influences expressed is narrow (Tables 46 and 47). In their open-ended responses, rural

*In spite of the way we tried to select the UCR sample, only 62 percent of the UCR physicians indicated that they considered alternative (i.e., nonmetropolitan) locations. Differences in wording or lack of validity in the screening process may have caused this discrepancy in responses from the initial to follow-up survey, but we do not know how much of the difference is attributable to either source.

Table 40

FACTORS DETERRING RURAL PHYSICIANS FROM METROPOLITAN AREAS (N=110)

Factor	No.	%
Uncomfortable with metropolitan life style and environment	79	71.8
High crime rate	77	70.0
Number of physicians already there	35	31.8
Spouse's aversion to metropolitan areas	35	31.8
High cost of living	30	27.3
Other	15	13.6

Table 41

FACTORS ATTRACTING UCR PHYSICIANS TO METROPOLITAN AREAS (N=92)

Factor	No.	%
Accessibility to cultural activities	79	85.9
Opportunity for regular contact with other physicians	69	75.0
More comfortable with metropolitan life style and environment	67	72.8
Accessibility to academic medical center	59	64.1
Spouse's preference for metropolitan living	54	58.7
Ability to limit practice specialty	41	44.6
Higher population density	31	33.7
Anticipated higher income	14	15.2
Other	7	7.6

Table 42

FACTORS DETERRING UCR PHYSICIANS FROM NONMETROPOLITAN AREAS (N=58)

Factor	No.	%
Possibility of professional isolation	36	62.1
Lack of opportunity for adequate continuing education	36	62.1
Lack of adequate hospital facilities	29	50.0
Poor quality education system for children	24	41.4
Anticipated workload too great	23	39.7
Inadequate contact with medical school	22	37.9
Spouse's aversion to nonmetropolitan areas	21	36.2
Uncomfortable with nonmetropolitan life style and environment	18	31.0
Influence of medical school training	11	19.0
Possibility of lower professional status	4	6.9
Other	2	3.4

Table 43

FACTORS IMPORTANT IN MAKING LOCATION CHOICE INDEPENDENT OF METROPOLITAN/NONMETROPOLITAN CONSIDERATIONS

Factor	UCR (N=99)		Rural (N=50)		Total (N=149)	
	No.	%	No.	%	No.	%
Opportunity to enter established solo practice	16	16.2	7	14.0	23	15.4
Opportunity to join desirable partnership	17	17.2	11	22.0	28	18.8
Opportunity to join desirable group practice	44	44.4	17	34.0	61	40.9
Recruitment efforts of community	9	9.1	9	18.0	18	12.1
Preferable climate	42	42.4	17	34.0	59	39.6
Preferable geographic features	44	48.5	24	48.0	68	45.6
Nearness to family and friends	48	48.5	23	46.0	71	47.7
Similar to community where grew up	15	15.2	14	28.0	29	19.5
Preference of spouse	36	36.4	15	30.0	51	34.2
Quality of education system for children	43	43.4	19	38.0	62	41.6
Availability of emergency medical services	21	21.2	6	12.0	27	18.1
Hospital facilities nearby	55	55.6	25	50.0	80	53.7
Availability of physician specialists[a]	58	58.6	14	28.0	72	48.3
Access to medical school programs[a]	48	48.5	5	10.0	53	35.6
Access to continuing medical education[a]	34	34.3	3	6.0	37	24.8
Income potential	35	35.4	17	34.0	52	34.9
Other[a]	11	11.1	11	22.0	22	14.8

[a]Chi square for difference between rural and UCR physicians is significant at .05 level.

physicians cite the importance of the rural preceptorship experience, the emphasis on GP training, and, most of all, the resisted attempts to discourage rural practice. UCR physicians most frequently indicate an emphasis on specialty training and an instilled desire to be near a medical center as influences transmitted by the medical school.

Physician Mobility

Table 48 shows the very low rate of mobility among surveyed physicians, even among rural physicians who might be expected to seek more professionally supportive environs after experiencing the reality of rural practice. Among those who gave a reason for leaving, only two rural physicians cited overwork or lack of free time.

Group Practice

Group practice opportunities were available to more than one-half of all physicians in the sample at the time of their location decision (Table 49).* Similarly, a large number, slightly more than one-half, of all physicians surveyed are currently in a group practice (Table 50).**

Group practice is viewed as desirable by most physicians; over two-thirds of each physician group would join a group practice now if they had the opportunity (Table 51).*** As an alternative measure of the desirability of the group practice mode, a cross-tabulation of availability of a group at the time of the location decision and the present practice status reveals that most physicians (73 percent of the UCR and 82 percent of rural) for which a group was available have joined a group (Table 52).

When comparing selection optional features of group practice, the physicians surveyed prefer small groups of 3 to 10 physicians (Table 53). UCR physicians prefer single-specialty groups to multispecialty groups,

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*However, proportionately fewer rural than UCR physicians and fewer GPs than non-GPs indicate the availability of such an opportunity; in fact, the rural GPs are least likely to have had the opportunity to join a group.

**Again, rural physicians, GPs, and especially rural GPs are less frequently in a group than are urban physicians and non-GPs.

***Groups appear alightly less attractive to GPs than non-GPs, but that difference may be related to perceived availability and thereby lower expectations.

Table 44

CONSIDERATION OF ALTERNATIVE KIND OF PRACTICE LOCATION BY RURAL PHYSICIANS

Scope of Consideration	No.	%
Considered Alternative Location		
Yes	83	43.7
No	109	56.3
Total	192	100.0
Visited Location		
Yes	71	85.5
No	12	14.5
Total	83	100.0

Table 45

INFLUENCES OF MEDICAL SCHOOL TRAINING[a]

Influence	UCR		Rural		Total	
	No.	%	No.	%	No.	%
Yes	37	19.1	29	15.0	66	17.1
No	157	80.9	164	85.0	321	82.9
Total	194	100.0	193	100.0	387	100.0

[a]Chi square is not significant.

while the rural physicians' preference is the reverse. Being within 15 minutes of a hospital is important to most physicians; over 70 percent of both rural and UCR physicians indicate it is important to have a hospital only 15 minutes away. Of the features listed on the questionnaire, the *type* of practice (single- versus multispecialty) is most often seen as the single most important characteristic of a group practice (Table 54).

In comparing group practice with other practice modes, the outstanding feature of a group is its ability to allow scheduled free time; approximately one-third of all the physicians check this as the

Table 46

INFLUENCES EXPRESSED BY RURAL PHYSICIANS

Influence	No.	%
Negative influence	11	37.9
Rural preceptorship experience	6	20.7
GP training	6	20.7
Other	5	17.2
No answer	1	3.4
Total	29	100.0

[a]Total may not add to 100.0 because of rounding

Table 47

INFLUENCES EXPRESSED BY UCR PHYSICIANS

Influence	No.	%
Specialty training	15	41.7
Desire for nearness to medical center	9	25.0
Familiarity with area	4	11.1
Negative influence (against rural)	4	11.1
Other	4	11.1
No answer	0	0
Total	36	100.0

Table 48

PHYSICIAN MOBILITY[a]

	UCR		Rural		Total	
	No.	%	No.	%	No.	%
Leaving within 2 years	12	6.2	10	5.4	222	5.8
Staying more than 2 years	181	93.2	176	94.6	357	94.2
Total	193	100.0	186	100.0	379	100.0

[a]Chi square is not significant

most favorable characteristic (Table 55). The only other characteristic checked by a substantial number of physicians is the ability to provide better quality care.

Table 49

AVAILABILITY OF GROUP PRACTICE OPPORTUNITY AT TIME OF PRACTICE LOCATION DECISION

Available	UCR		Rural		Total	
	No.	%	No.	%	No.	%
Yes	129	69.4	98	52.4	227	60.9
No	57	30.6	89	47.6	146	39.1
Total	186	100.0	187	100.0	373	100.0

[a]Chi square equals 11.2 with 1 degree of freedom; $p < .001$.

Table 50

CURRENT GROUP PRACTICE STATUS[a]

In Group	UCR		Rural		Total	
	No.	%	No.	%	No.	%
Yes	112	58.6	98	51.0	210	54.8
No	79	41.4	94	49.0	173	45.2
Total	191	100.0	192	100.0	383	100.0

[a]Chi square is not significant.

Table 51

DESIRABILITY OF GROUP PRACTICE[a]

Would Join Now	UCR		Rural		Total	
	No.	%	No.	%	No.	%
Yes	116	75.3	109	72.2	225	73.8
No	38	24.7	42	27.8	80	26.2
Total	154	100.0	151	100.0	305	100.0

[a]Chi square is not significant.

Table 52

CURRENT PRACTICE STATUS BY AVAILABILITY OF GROUP[a]

Currently in Practice	Group Available at Decision Time					
	UCR		Rural		Total	
	No.	%	No.	%	No.	%
Yes	94	72.9	80	81.6	174	76.7
No	34	27.1	18	18.4	53	23.3
Total	129	100.0	98	100.0	227	100.0

[a]Chi square is not significant

Table 53

MOST FAVORABLE CHARACTERISTICS OF GROUP PRACTICE

Characteristics	UCR		Rural		Total	
	No.	%	No.	%	No.	%
Size[a]						
3-10 physicians	126	64.9	112	58.0	238	61.5
11-20 physicians	7	3.6	15	7.8	22	5.7
20+ physicians	10	5.2	12	6.2	22	5.7
Not important	15	7.7	18	9.3	33	8.5
No checks or multiple checks	36	18.6	36	18.7	72	18.6
Total	194	100.0	193	100.0	387	100.0
Type[b]						
Single specialty	83	42.8	48	24.9	131	33.9
Multispecialty	50	25.8	82	42.5	132	34.1
Not important	23	11.9	25	13.0	48	12.4
No checks or multiple checks	38	19.6	38	19.7	76	19.6
Total	194	100.0[c]	193	100.0[c]	387	100.0
Nearness to hospital[b]						
Within 0-5 minutes	66	34.0	101	52.3	167	43.2
Within 5-15 minutes	72	37.1	39	20.2	111	28.7
Within 15-30 minutes	9	4.6	6	3.1	15	3.9
Not important	8	4.1	10	5.2	18	4.7
No checks or multiple checks	39	20.1	37	19.2	76	19.6
Total	194	100.0	193	100.0	387	100.0[c]
Other	5	100.0	9	100.0	14	100.0

[a]Chi square is not significant.

[b]Chi square is significant at .001 level.

[c]Totals may not add to 100.0 because of rounding.

Table 54

SINGLE MOST IMPORTANT CHARACTERISTIC OF GROUP PRACTICE[a]

Characteristic	UCR		Rural		Total	
	No.	%	No.	%	No.	%
Size	19	13.0	30	20.3	49	16.6
Type	76	52.1	75	50.7	151	51.4
Nearness to hospital	8	5.5	14	9.4	22	7.5
Other	43	29.4	29	19.6	72	24.5
Total	146	100.0	148	100.0	294	100.0

[a]Chi square is not significant.

Table 55

SINGLE MOST FAVORABLE CHARACTERISTIC OF GROUP PRACTICE WHEN COMPARING IT TO OTHER PRACTICE MODES[a]

Characteristic	UCR		Rural		Total	
	No.	%	No.	%	No.	%
Peer support	9	6.5	13	9.4	22	7.9
Scheduled free time	73	52.5	63	45.7	136	49.1
Less administrative responsibility	6	4.3	9	6.5	15	5.4
Better quality care	36	25.9	23	16.7	59	21.3
Lower Start-up costs	3	2.2	4	2.9	7	2.5
Opportunity for team practice	10	7.2	25	18.1	35	12.6
Other	2	1.4	1	0.7	3	1.1
Total	139	100.0	138	100.0	277	100.0[b]

[a]Chi square is not significant.

[b]Total may not add to 100.0 because of rounding.

SUMMARY

The basis or context for a location choice is quite different for rural and UCR physicians. The rural physician's choice is usually dictated by an overriding preference for rural areas. This preference is primarily based on comfort with the rural life style (including population density and recreation) and becomes more central in the

decisionmaking process than particular community characteristics. The UCR physician has not shown to the same extent a preference for either urban or rural practice in choosing a community. Of seemingly greater concern to these physicians is professional support--hospital, specialist consultation, medical school, group practice. As a potential source of rural care, they appear willing to choose a rural practice location, if such support is provided. Certainly their minds seem open until the final decision is made, for they are visiting rural communities. But even the UCR physician who makes his choice based on a preference for urban areas expresses the same concern with regard to possible professional isolation in rural areas.

The view of the medical school training experience as a deterrent to rural practice has not been supported by the present data. However, what little effect the training has on UCR physicians is discouraging to nonspecialized, rural practice.

Group practice appears to be much more desirable than either solo or partnership practice modes. More than one-half of the physicians surveyed are currently in a group; a substantial two-thirds would join a group if they were starting practice again. A slight discrepancy exists in the availability of group practice opportunities for rural versus urban physicians.

The kind of group that rural physicians find favorable is small (3 to 10 physicians), has a number of specialties under one roof, and is very close to the hospital. UCR physicians, on the other hand, prefer small single-specialty groups within 15 minutes of a hospital. Group practice is more desirable than other practice modes because of the opportunity to allow scheduled free time.

V. DISCUSSION AND CONCLUSIONS

Two surveys of recent medical school graduates explored the location decision process of primary care physicians. In questionnaires designed to identify key decision factors differentiating urban and rural physicians, several long-believed relationships were confirmed and other, less anticipated relationships were uncovered. The results of the surveys point to serious policy considerations in the following areas.

EXPOSURE TO RURAL AREAS

By far the most significant finding of the present surveys is the confirmation of the strong relationship between the primary care physician's place of rearing and his eventual practice location choice. Other studies have shown such an association on geographically limited samples;[6, 11] and the idea that exposure to rural places, such as having grown up in a rural area, is an important predictor of rural location choice, was most recently given strong support in an analysis by Yett and Sloan.[24] But in the present analysis, the powerful predictive value of place of rearing, when other background and attitudinal factors are held constant, was clearly demonstrated for a large, nationally representative sample. The regression analysis, yielding a coefficient of .27 for place of rearing, suggests that increasing the number of medical students with rural backgrounds will increase the number of physicians choosing rural practice.

Certainly programs following such an approach have been in operation and with some success. For example, the University of Illinois, encouraged by the Illinois Student Scholarship Fund, while not adjusting its admissions standards, gives special admissions consideration to applicants displaying background and intentions favoring a rural practice choice. As a result, their loan program has shown a high success rate (73 percent)* of repayment by rural service.[25]

*The average success rate among eleven existing loan forgiveness programs was reported as 60 percent.

However, the feasibility of a nationwide policy of selective admissions brings up the question of discrimination in admissions policies. The best approach may be recruitment of qualified potential medical students from the rural areas of the nation reinforced by loan incentives. The success of various programs that emphasize rural background as a criterion for aid should be determined.

In addition to having grown up in a rural area, having participated in a rural preceptorship is a significant predictor of rural practice choice. However, while such programs may provide needed reinforcement of the reality and advantages of rural practice during the physician's medical school training, one cannot determine definitely from the present data whether the association between participation and practice choice is an artifact of a selection bias, i.e., only those medical students who already have a strong interest in a rural practice actually participate. Further investigation may reveal whether exposure to these programs can change the eventual destination of those physicians intending urban practice.

The location of the physician's training (though not medical school alone) is a strongly perceived influence on his location decision, and, since most medical training centers are in urban areas, a strong predictor of urban practice.

COMMUNITY FACTORS

The economic attraction of a community has been shown to be important in the literature of physician location. However, in our original sample of primary care physicians, neither income potential nor prosperity of the community emerges as a significant *perceived* influence. Perhaps these measures of economic attraction require socially unacceptable responses and are therefore undercounted.

Other factors related to the practice setting do appear to be significant, however. Leisure time activities are important to physicians; "recreation and sports facilities" is checked frequently on both the original and follow-up survey by physicians choosing a rural practice location. On the other hand, opportunities for social life and cultural advantages are strongly related to an urban practice

choice. It is not clear what the rural community, by nature of being rural, can do about increasing its attractiveness on these two factors. In order to compensate for inadequacies of this type, the community could appraise its recreational advantages and present them in their best light. In addition, the wife's concern for quality education for the children and shopping opportunities suggest other features that the community could emphasize. Above all, rural communities should be made aware of the stated importance of these considerations to physicians in their decision about a practice location.

PROFESSIONAL CONSIDERATIONS

On the original survey, one of the most frequently checked influences and a strong predictor of rural practice is the stated opportunity to join a desirable partnership or group practice. This fact is reiterated in the physician's concern for other types of professional support, especially in areas remote from medical centers. The UCR physician's concern for professional considerations in his location choice and the overwhelming desirability of group practice on the follow-up survey provide further testimony of the importance physicians place on professional factors in the location decision. One should keep in mind, however, that the data *do not* demonstrate or predict that encouraging the formation of new group practices in rural areas, through financial or management assistance, will attract more physicians to those areas; they are merely descriptive of the concerns of young physicians. Nevertheless, plausible inferences can be drawn, e.g., lack of group practice opportunities in a rural area will not be perceived as a community asset by the physician considering choosing or remaining in the community.

Besides the attraction of group practice, the opportunity for regular contact with a medical school or medical center, with the clinical and peer support and access to continuing education that it allows, appears to be the concern of physicians who choose urban areas. Area health education centers might meet these needs in rural areas and lessen the attraction urban centers have by ensuring that the physician would not be professionally isolated.

The follow-up survey attests to the professional concerns of many physicians who have not closed their minds to rural practice. These physicians represent an untapped source of medical manpower for rural areas.

Appendix A

SURVEY OF 1965 MEDICAL SCHOOL GRADUATES--
PHYSICIAN QUESTIONNAIRE

Appendix A

SURVEY OF 1965 MEDICAL SCHOOL GRADUATES
PHYSICIAN QUESTIONNAIRE

AMERICAN MEDICAL ASSOCIATION
535 North Dearborn Street, Chicago, Illinois 60610

Fill in the blank or put an "X" in the box opposite the answer which most nearly fits your situation. Check only one box for each question.

1. Describe your present status.
   - a. In residency or fellowship training (non-federal) ☐ 13-1
   - b. In federal service (including military, Public Health Service, or Veterans Administration) ☐ -2
   - c. In active patient care practice (non federal) ☐ -3 → Skip to Question 3.
   - d. In other professional activity (teaching, research, administration, etc.) ☐ -4

2. If you did not check "c" in Question 1, which of the following most closely describes your present plans:
   - a. Plan to be in active patient care practice (non-federal) by September 1973 and certain or fairly certain where the practice will be located ☐ 14-1
   - b. Plan to be in active patient care practice (non-federal) by September 1973 but do not know where the practice will be located ☐ -2
   - c. Neither of the above ☐ -3

If you checked "a" in Question 2, please answer this questionaire as if you were already in practice at that location.

If you checked "b" or "c," stop here. Please place the questionnaire in the return envelope and mail it as soon as possible. Ignore the enclosed "Wife Questionnaire." Thank you for your cooperation.

3. What is (or will be) your specialty in active patient care practice?
   - a. General practice or family practice ☐ 15-1
   - b. Internal medicine ☐ -2
   - c. Pediatrics ☐ -3
   - d. Obstetrics-gynecology ☐ -4
   - e. Surgery (all types) ☐ -5
   - f. Psychiatry ☐ -6
   - g. Radiology ☐ -7
   - h. Anesthesiology ☐ -8
   - i. Pathology ☐ -9
   - j. Other ☐ -0

4. Is (or will) your practice (be) limited to a subspecialty?
   - a. Yes ☐ 16-1
   - b. No ☐ -2

5. In what State, County, and City (or town) did you reside primarily until 18 years of age?
   - State _____ 17-18
   - County _____ 19-21
   - City (or town) _____ 22-25

6. In what State, County, and City (or town) do you (or do you plan to) practice?
   - State _____ 26-27
   - County _____ 28-30
   - City (or town) _____ 31-34

7. In your medical education or training, did you participate in a rural preceptorship program or other experimental rural health program?
   - a. Yes ☐ 35-1
   - b. No ☐ -2

8. When did you decide to locate your practice in the *kind* of community you have now chosen (i.e., urban, rural, suburban)?
   - a. Before medical school ☐ 36-1
   - b. During medical school ☐ -2
   - c. During internship, residency, or other house staff training ☐ -3
   - d. During military service ☐ -4
   - e. Other *(Specify* _____*)* ☐ -5

9. If your practice is not (or will not be) located in a small town or rural area, did you ever seriously consider such a practice location?
   a. Yes ☐ 37-1
   b. No ☐ -2
   c. Not applicable ☐ -3

10. Listed below is a group of factors which are said to be important when a physician decides where to locate his practice. Were any of them especially important to you in picking one location over others? Check any factors which helped you decide where to locate.
   a. Income potential ☐ 38
   b. Climate or geographic features of area ☐ 39
   c. Having been brought up in such a community ☐ 40
   d. Payment of "forgiveness loan" ☐ 41
   e. Influence of wife or husband (her/his desires, career, etc.) ☐ 42
   f. Influence of family or friends ☐ 43
   g. High medical need in area ☐ 44
   h. Influence of preceptorship program ☐ 45
   i. Having gone through medical school, internship, residency, or military service near here ☐ 46
   j. Advice of older physician ☐ 47

   Listed below is another group of factors. Check any factors from this group which helped you decide where to locate.
   k. Organized efforts of community to recruit physicians ☐ 48
   l. Opportunities for social life 49
   m. Recreational and sports facilities 50
   n. Quality of educational system for children 51
   o. Prospect of being more influential in community affairs 52
   p. Cultural advantages ☐ 53
   q. Prosperity of community ☐ 54
   r. Preference for urban or rural living ☐ 55

   Listed below is another group of factors. Check any factors from this group which helped you decide where to locate.
   s. Availability of clinical support facilities and personnel ☐ 56
   t. Availability of good social service, welfare, or home care services ☐ 57
   u. Opportunity for regular contact with a medical school or medical center ☐ 58
   v. Opportunity for regular contact with other physicians ☐ 59
   w. Opportunity to join desirable partnership or group practice ☐ 60
   x. Availability of loans for beginning practice ☐ 61
   y. Opportunity to work with specific institution ☐ 62
   z. Access to continuing education ☐ 63

   Among all the factors checked above, choose the three that were most important in attracting you to the location you selected and rank them below.

RANK	LETTER CORRESPONDING TO FACTOR
1 (most important)	64
2	65
3	66

11. Male Physicians: Please ask your wife to complete the attached questionnaire. *(If you are not married, check here* ☐ 67 *)*

Thank you for participating in this survey. Please place your questionnaire in the return envelope and mail it as soon as possible. We appreciate your cooperation.

Appendix B

WIFE QUESTIONNAIRE

Appendix B

SURVEY OF 1965 MEDICAL SCHOOL GRADUATES
WIFE QUESTIONNAIRE

AMERICAN MEDICAL ASSOCIATION
535 North Dearborn Street, Chicago, Illinois 60610

Fill in the blank or put an "X" in the box opposite the answer which most nearly fits your situation. Check only one box for each question.

1 Age _____ 13-14

2. Highest education level
   - a. High school graduate or less ☐ 15-1
   - b. Some college – no bachelor's degree ☐ -2
   - c. College graduate ☐ -3
   - d. Postgraduate degree *(Specify* _____*)* ☐ -4

3. In what State, County, and City (or town) did you reside primarily until 18 years of age?
   - State _____ ☐ 16-17
   - County _____ ☐ 18-20
   - City (or town) _____ ☐ 21-24

4. Were you married or engaged to your husband at the time he decided to locate in the community where he has (or soon will) set up practice?
   - a. Yes ☐ 25-1
   - b. No ☐ -2

5. How much influence do you think you had on your husband's decision to locate in the community where he has (or soon will) set up practice?
   - a. Complete or almost complete – entirely or almost entirely my decision ☐ 26-1
   - b. Great – I had a great deal of influence ☐ -2
   - c. Moderate – as much his choice as mine ☐ -3
   - d. Little – mostly his decision ☐ -4
   - e. None or almost none – entirely or almost entirely his decision ☐ -5 } Skip to Question 7
   - f. Not applicable – did not know my husband at that time ☐ -6 } Skip to Question 7

6. Listed below are factors which you may have considered when your husband decided where to locate his practice. Check any items which were especially attractive to you.
   - a. Family or friends ☐ 27
   - b. Income potential of husband ☐ 28
   - c. Climate or geographic features of area ☐ 29
   - d. Having been brought up in this or similar community ☐ 30
   - e. Husband's desires, career, etc. ☐ 31
   - f. Opportunities for your own career ☐ 32
   - g. Access to continuing education ☐ 33
   - h. Organized efforts of community to recruit a physician ☐ 34
   - i. Opportunities for social life ☐ 35

   Listed below is another group of factors. Check any items from this group which were also especially attractive to you.
   - j. Recreational and sports facilities ☐ 36
   - k. Shopping opportunities ☐ 37
   - l. Quality of educational system for children ☐ 38
   - m. Prospect of being more influential in community affairs ☐ 39
   - n. Facilities for out-of-town transportation ☐ 40
   - o. Cultural advantages ☐ 41
   - p. Prosperity of community ☐ 42
   - q. Preference for urban or rural living ☐ 43

   Among all the factors checked above, choose the three that were most important and rank them below.

RANK		LETTER CORRESPONDING TO FACTOR
1 (most important)	=	_____ 44
2	=	_____ 45
3	=	_____ 46

7. If your husband's practice is not (or will not be) located in a small town or rural area, did you ever seriously consider such a location?

a. Yes . . . . . ☐ 47-1
b. No . . . . . ☐ -2
c. Not applicable . . . . . ☐ -3

Thank you for participating in this survey. Please place your completed questionnaire in the return envelope and mail it as soon as possible. *Also, please make sure your husband has returned his questionnaire.* We appreciate your cooperatio

Appendix F

TABLES FROM ORIGINAL SURVEYS, USING RANKED INFLUENCES

Table C1

FREQUENCY OF FACTORS RANKED 1, 2, OR 3
BY PRIMARY CARE PHYSICIANS (N=1161)

Factor	No	%
Opportunity to join a desirable partnership or group practice	499	43.0
Climate or geographic features of area	402	34.6
Availability of clinical support facilities and personnel	251	21.6
Preference for urban or rural living	250	21.5
Income potential	192	16.5
Opportunity for regular contact with a medical school or medical center	184	15.9
Influence of spouse	181	15.6
Having been brought up in such a community	163	14.0
Having gone through medical school, internship, residency, or military service near here	143	12.3
Recreational and sports facilities	139	12.0
High Medical need in area	136	11.7
Quality of education system for children	119	10.3
Opportunity for regular contact with other physicians	113	9.7
Influence of family or friends	107	9.2
Access to continuing education	103	8.9
Cultural advantages	91	7.8
Opportunity to work with specific institution	68	5.9
Opportunities for social life	40	3.5
Prosperity of community	30	2.6
Organized efforts of community to recruit physicians	22	1.9
Advice of older physician	21	1.8
Prospect of being more influential in community affairs	20	1.7
Influence of preceptorship program	12	1.0
Payment of forgiveness loan	11	1.0
Availability of good social service, welfare, and home care services	11	1.0
Availability of loans for beginning practice	9	0.8

Table C2

FREQUENCY OF FACTORS RANKED 1, 2, OR 3 BY PRIMARY CARE PHYSICIANS

Urban Primary Care Physicians (N=839)		
Factor	No.	%
Opportunity to join desirable partnership or group practice	353	42.1
Climate or geographic features of area	285	34.0
Availability of clinical support facilities and personnel[a]	201	24.0
Opportunity for regular contact with a medical school or medical center[a]	167	19.9
Preference for urban or rural living[a]	139	16.6
Income potential	138	16.5
Influence of spouse	131	15.6
Having gone through medical school, internship, residency, or military service near here	123	14.7
Having been brought up in such community	114	13.6
Quality of education system for children	92	11.0
Access to continuing education[a]	89	10.6
Recreational and sports facilities[a]	87	10.4
Influence of family or friends	84	10.0
Cultural advantages[a]	83	9.9
Opportunity for regular contact with other physicians	81	9.7
High medical need in area[a]	73	8.7
Opportunity to work with specific institution	51	6.1
Opportunities for social life[a]	38	4.5
Prosperity of community	19	2.3
Advice of older physician	15	1.8
Prospect of being more influential in community affairs	13	1.6
Availability of good social service, welfare and home care services	10	1.2
Organized efforts of community to recruit physicians[a]	8	1.0
Availability of loans for beginning practice[a]	5	0.6
Influence of preceptorship program[a]	4	0.5
Payment of forgiveness loan[a]	3	0.4

[a]Chi square for differences between urban and rural physicians is significant at the .01 level.

Table C2 (Continued)

Rural Primary Care Physicians (N=288)		
Factor	No.	%
Opportunity to join desirable partnership or group practice	133	46.2
Climate or geographic features of area	108	37.5
Preference for urban or rural living[a]	104	36.1
High medical need in area[a]	58	20.1
Recreational and sports facilities[a]	50	17.4
Income potential	49	17.0
Having been brought up in such community	47	16.3
Availability of clinical support facilities and personnel[a]	44	15.3
Influence of spouse	38	13.2
Opportunity for regular contact with other physicians	29	10.1
Quality of education system for children	26	9.0
Influence of family or friends	17	5.9
Having gone through medical school, internship, residency, or military service near here[a]	17	5.9
Organized efforts of community to recruit physicians[a]	13	4.5
Opportunity to work with specific institution	13	4.5
Access to continuing education[a]	12	4.2
Prosperity of community	11	3.8
Opportunity for regular contact with a medical school or medical center[a]	8	2.8
Influence of preceptorship program[a]	8	2.8
Payment of forgiveness loan[a]	7	2.4
Prospect of being more influential in community affairs	7	2.4
Cultural advantages[a]	7	2.4
Advice of older physician	6	2.1
Availability of loans for beginning practice	4	1.4
Opportunities for social life[a]	2	0.7
Availabilities of good social services, welfare and home care services	1	0.4

[a]Chi square for differences between urban and rural physicians is significant at the .01 level.

Table C3

FREQUENCY OF FACTORS RANKED 1, 2, OR 3 BY GPs AND NON-GPs

General Practitioners (N=442)		
Factor	No.	%
Climate or geographical features of area	164	37.1
Opportunity to joina desirable partnership or group practice	158	35.7
Preference for urban or rural living[a]	119	26.9
Availability of clinical support facilities and personnel	86	19.5
Income potential	83	18.8
Influence of spouse	72	16.3
High medical need in area[a]	71	16.1
Having been brought up in such a community	70	15.8
Recreational and sports facilities[a]	67	15.2
Opportunity for regular contact with other physicians[a]	56	12.7
Quality of education system for children	42	9.5
Having gone through medical school, internship, residency, or military service near here[a]	40	9.0
Influence of family or friends[a]	30	6.8
Access to continuing education[a]	29	6.6
Opportunity to work with specific institution	24	5.4
Cultural advantages[a]	23	5.2
Opportunity for regular contact with a medical school or medical center[a]	21	4.8
Prospect of being more influential in community affairs[a]	14.	3.2
Organized efforts of community to recruit physicians	14	3.2
Prosperity of community	12	2.7
Opportunities for social life	10	2.3
Advice of older physicians	10	2.3
Influence of preceptorship program[a]	9	2.0
Payment of forgiveness loans[a]	9	2.0
Availability of good social service, welfare, and home care services	4	0.9
Availability of loans for beginning practice	3	0.7

[a]Chi square for differences between general practitioners and non-general practitioners is significant at the.05 level.

Table C3 (Continued)

Factors	Non-general Practitioners (N=719) No.	%
Opportunity to join desirable partnership or group practice[a]	340	47.3
Climate or geographic features of area	238	33.1
Availability of clinical support facilities and personnel	164	22.8
Opportunity for regular contact with a medical school or medical center[a]	163	22.7
Preference for urban or rural living[a]	131	18.2
Influence of spouse	109	15.2
Income potential	109	15.2
Having gone through medical school, internship, residency or military service near here[a]	103	14.3
Having been brought up in such community	93	12.9
Quality of education system for children	77	10.7
Influence of family or friends[a]	76	10.6
Access to continuing education[a]	73	10.2
Recreational and sports facilities[a]	72	10.0
Cultural advantages[a]	68	9.5
High medical need in area[a]	63	88.8
Opportunity for regular contact with other physicians[a]	57	7.9
Opportunity to work with specific institution	43	6.0
Opportunities for social life	30	4.2
Prosperity of community	18	2.5
Advice of older physician	11	1.5
Organized efforts of community to recruit physicians[a]	8	1.1
Availability of good social service, welfare and home care services	7	1.0
Prospect of being more influential in community affairs[a]	6	0.8
Availability of loans for beginning practice	6	0.8
Influence of preceptorship program	3	0.4
Payment of forgiveness loan[a]	2	0.3

[a]Chi square for differences between general practitioners and non-general practitioners is significant at the .05 level.

Table C4

FREQUENCY OF FACTORS RANKED 1, 2, OR 3 BY TIME OF PHYSICIANS" LOCATION DECISION

Decided before Medical School (N=159)		
Factor	No.	%
Having been brought up in such a community[a]	57	35.8
Preference for urban or rural living[a]	55	33.3
Opportunity to join a desirable partnership or group practice[a]	50	31.4
Climate or geographical features of area	50	31.4
Availability of clinical support facilities and personnel	32	20.1
Influence of spouse	20	12.6
Opportunity for regular contact with a medical school or medical	19	11.9
Quality of education system for children	17	10.7
Influence of family or friends	17	10.7
High medical need in area	16	10.1
Having gone through medical school, internship, residency, or military service near here	16	10.1
Income potential[a]	15	9.4
Opportunities for social life[a]	14	8.8
Cultural advantages	14	8.8
Recreational and sports facilities	12	7.5
Opportunity for regular contact with other physicians	11	6.9
Opportunity to work with specific institution	9	5.7
Access to continuing education	9	5.7
Influence of preceptorship program[a]	4	2.5
Organized efforts of community to recruit physicians	4	2.5
Advice of older physician	3	1.9
Prosperity of community	3	1.9
Availability of loans for beginning practice	3	1.9
Payment of forgiveness loan	2	1.3
Availability of good social service, welfare, and home care services	2	1.3
Prospect of being more influential in community affairs	1	0.6

[a]Chi square for differences among times of decision is insignificant at the .05 level.

Table C4 (Continued)

Decided during Medical School (N=120)		
Factor	No.	%
Climate or geographic features of area	43	35.8
Opportunity to join desirable partnership of group practice[a]	41	34.2
Preference for urban or rural living[a]	33	27.5
Having been brought up in such community[a]	22	18.3
Influence of spouse	19	15.8
High medical need in area	19	15.8
Availability of clinical support facilities and personnel	19	15.8
Income potential[a]	18	15.0
Opportunity for regular contact with a medical school or medical center	15	12.5
Recreational and sports facilities	14	11.7
Influence of family or friends	12	10.0
Opportunity for regular contact with other physicians	12	10.0
Cultural advantages	10	8.3
Having gone through medical school, internship, residency, or military service near here	10	8.3
Influence of preceptorship program[a]	7	5.8
Quality of education system for children	7	5.8
Opportunity to work with specific institution	7	5.8
Access to continuing education	7	5.8
Prospect of being more influential in community affairs	5	4.2
Prosperity of community	4	3.3
Payment of forgiveness loan	4	3.5
Advice of older physician	3	2.5
Opportunities for social life[a]	3	2.5
Availability of good social service, welfare and home care services	2	1.7
Organized efforts of community to recruit physicians	2	1.7
Availability of loans for beginning practice	0	0.0

[a]Chi square for differences among times of decision is significant at the .05 level.

Table C4 (Continued)

Decided after Medical School (N=862)		
Factor	No.	%
Opportunity to join desirable partnership or group practice[a]	401	46.5
Climate or geographic features of area	301	34.9
Availability of clinical support facilities and personnel	196	22.7
Preference for urban or rural living[a]	160	18.6
Income potential[a]	158	18.3
Opportunity for regular contact with a medical school or medical center	148	17.2
Influence of spouse	137	15.9
Having gone through medical school, internship, residency, or military service near here	116	13.5
Recreational and sports facilities	112	13.0
High medical need in area	97	11.3
Quality of education system for children	93	10.8
Opportunity for regular contact with other physicians	89	10.3
Access to continuing education	83	9.6
Having been brought up in such community[a]	83	9.6
Influence of family or friends	74	8.6
Cultural advantages	66	7.7
Opportunity to work with specific institution	51	5.9
Prosperity of community	23	2.7
Opportunities for social life[a]	22	2.6
Organized efforts of community to recruit physicians	16	1.9
Advice of older physician	15	1.7
Prospect of being more influential in community affairs	14	1.6
Availability of good social service, welfare and home care services	6	0.7
Availability of loans for beginning practice	6	0.7
Payment of forgiveness loan	6	0.7
Influence of preceptorship program[a]	1	0.1

[a]Chi square for differences among times of decision is significant at the .05 level.

Table C5

FREQUENCY OF FACTORS RANKED 1, 2, OR 3 BY WIVES OF PRIMARY CARE PHYSICIANS (N=531)

Factor	No.	%
Husband's desires, career, etc.	280	52.7
Climate or geographic features of area	207	39.0
Family or friends	187	35.2
Preference for urban or rural living	167	31.5
Quality of education system for children	147	27.7
Income potential of husband	93	17.5
Recreation and sports facilities	89	16.8
Cultural advantages	88	16.6
Having been brought up in similar community	80	15.1
Access to continuing education	61	11.5
Opportunities for social life	41	717
Prosperity of community	33	6.2
Opportunities for your own career	23	4.3
Organized efforts of community to recruit MD	17	3.2
Shopping opportunities	14	2.6
Prospect of being more influential in community affairs	12	2.6
Facilities for out-of-town transportation	9	1.7

Table C6

FACTORS RANKED 1, 2, OR 3 BY WIVES OF PRIMARY CARE PHYSICIANS, BY LOCATION

Factor	No.	%
Wives of urban primary care physicians (N=368)		
Husband's desires, career, etc.	188	51.1
Family or friends[a]	145	39.4
Climate or geographic features of area	142	38.6
Quality of education system for children	113	30.7
Preference for urban or rural living[a]	90	24.5
Cultural advantages[a]	76	20.7
Income potential of husband	69	18.8
Recreation and sports facilities	56	15.2
Having been brought up in similar community	51	13.9
Access to continuing education	43	11.7
Opportunities for social life	30	8.2
Prosperity of community	21	5.7
Opportunities for your own career	21	5.7
Shopping opportunities	11	3.0
Organized efforts of community to recruit MD	10	2.7
Facilities for out-of-town transportation	7	1.9
Prospect of being more influential in community affairs	66	1.6
Wives of rural primary care physicians (N=151)		
Husband's desires, career, etc.	85	56.3
Preference for urban or rural living[a]	72	47.7
Climate or geographic features of area	62	41.1
Family or friends[a]	37	24.5
Quality of education system for children	30	19.9
Recreation and sports facilities	30	19.9
Having been brought up in similar community	26	17.2
Income potential of husband	21	13.9
Access to continuing education	18	11.9
Prosperity of community	12	7.9
Cultural advantages[a]	11	7.3
Opportunities for social life	9	6.0
Organized efforts of community to recruit MD	7	4.6
Prospect of being more influentia in community affairs	6	4.0
Shopping opportunities	3	2.0
Opportunities for your own career	2	1.3
Facilities for out-of-town transportation	2	1.3

[a]Chi square for differences between urban and rural wives significant at .01 level.

Table C7

REGRESSION ANALYSIS OF BACKGROUND CHARACTERISTICS AND RANKED DECISION INFLUENCES OF PRIMARY CARE PHYSICIANS AND THEIR WIVES ON PRACTICE LOCATION

Independent Variables	All Primary Care MDs			All GPs		All Non-GPs	
	1	2	3	4	5	6	7
Background Characteristics - MD (P_B)							
Place of rearing	.32 (15.64)[a]	--	.25 (6.13)	.38 (9.11)	.23 (2.78)	.22 (7.03)	.18 (3.66)
Sex (1=female, 0=male)	.33 (1.46)	--	0.0 (.00)	-.13 (-.30)	--	.58 (2.27)	--
Age	.02 (.94)	--	.04 (1.14)	.06 (2.07)	.07 (1.26)	.01 (.42)	.09 (1.67)
Marital status (1=not married, 0=married)	.34 (1.06)	--	-3.49 (-2.03)	.75 (1.25)	0.0 (.00)	.05 (.14)	-3.61 (-2.40)[c]
Rural preceptorship	-.33 (-2.11)	--	-.41 (-1.73)	-.22 (-.87)	-.60 (-1.5)	-.18 (-.91)	-.19 (-.55)
GP - non-GP (1=GP, 0=non-GP)							
Decision Influences - MD (P_{DI})							
Income potential	.21 (1.21)	--	-.29 (-1.03)	.14 (.45)	.30 (.50)	.31 (1.51)	-.87 (-2.69)
Climate, geography	-.18 (-1.24)	--	-.22 (-.68)	-.06 (-.24)	-.13 (-.36)	-.22 (-1.26)	-.44 (-1.48)
Raised in such community	-.10 (-.55)	--	-.41 (-1.55)	-.36 (-1.18)	-.33 (-.81)	.13 (.62)	-.68 (-2.04)
Forgiveness loan	-1.89 (-3.08)	--	-1.77 (-1.75)	-1.32 (-1.67)	-3.34 (-2.04)	-2.55 (-2.17)	.22 (.14)
Spouse	.15 (.55)	--	-.24 (-.93)	.11 (.39)	.67 (1.27)	.13 (.53)	-.69 (-2.15)
Family, friends	.23 (1.09)	--	-.26 (-.75)	.00 (.00)	.39 (.51)	.31 (1.30)	-.86 (-2.14)
High medical need	-.73 (-3.59	--	-1.13 (-2.03)	-.74 (-2.35)	-.82 (-1.38)	-.70 (-2.65)	-1.71 (-4.13)
Preceptorship	-.60 (-1.13)	--	.35 (.51)	-.54 (-.84)	1.09 (.99)	-.64 (-.67)	1.47 (1.77)
Training nearby	.77 (4.10)	--	.36 (1.22)	1.01 (2.72)	.30 (.42)	.59 (2.91)	-.03 (-.10)
Older physician	-.49 (-1.16)	--	1.18 (1.53)	-1.07 (-1.54)	-1.72 (-1.45)	.25 (.48)	.62 (.57)
Community recruitment	-1.25 (-2.92)	--	-2.14 (-3.49)	-.19 (-.30)	-.23 (-.22)	-2.41 (-3.95)	-5.02 (-5.65)
Social life	.89 (2.85)	--	.01 (.00)	.62 (.64)	-.58 (-.42)	.97 (3.99)	-.30 (-.93)
Recreation, sports	-.29 (-1.48)	--	-.18 (-.62)	-.36 (-1.15)	.02 (.04)	-.11 (-.45)	-.41 (-1.15)
Education system	.17 (.68)	--	-.02 (.00)	-.14 (-.39)	.01 (.00)	.33 (1.46)	-.33 (-.96)
Influential in community	-.84 (-2.00)	--	-.93 (-1.62)	-.44 (-.76)	.06 (.10)	-.86 (-1.86)	-2.65 (-2.97)
Cultural advantages	.83 (3.63)	--	-.36 (-1.06)	1.01 (2.14)	.01 (.00)	.73 (2.99)	-.84 (-2.03)
Prosperity of community	.06 (.26)	--	.28 (.58)	-.08 (-.14)	.54 (.54)	.11 (.28)	.28 (.58)
Preference urban/rural	-.76 (-4.73)	--	-.77 (-3.06)	-1.26 (-4.77)	-1.04 (-2.25)	-.24 (-1.22)	-.75 (-2.44)
Clinical support	.17 (1.03)	--	.09 (.36)	-.10 (-.33)	.26 (.46)	.19 (.96)	-.22 (-.75)
Social services	-.17 (-.30)	00	-2.52 (-2.06)	-.06 (.00)	.43 (.17)	-.03 (.00)	-4.88 (-3.36)
Contact medical center	1.06 (6.34)	--	.62 (2.20)	.91 (1.81)	1.50 (1.59)	.99 (5.31)	.14 (.46)
Contact other MDs	.00 (.00)	--	-.25 (-.77)	.01 (.00)	-.14 (-.32)	.09 (.33)	-.45 (-1.10)
Partnership, group	-.17 (-1.26)	--	-.42 (-1.84)	-.30 (-1.20)	-.22 (-.47)	-.16 (-.96)	-.28 (-2.84)
Loan availability	.08 (.14)	--	-.78 (-.88)	-.83 (-.70)	-1.14 (-.73)	.43 (.62)	-1.57 (-1.1-)
Specific institution	.07 (.25)	--	-.04 (-.10)	-.01 (-.10)	.74 (.74)	.13 (.43)	-.70 (-1.74)
Continuing education	.23 (1.05)	--	.10 (.30)	-.19 (-.45)	.43 (.62)	.39 (1.56)	-.58 (-1.46)

Table C7 (Cont'd)

Independent Variables	All Primary Care MDs			All GPs		All Non-GPs	
	1	2	3	4	5	6	7
Background Characteristics - Wife (W_B)							
Place of rearing	--	--	.13 (3.04)	--	.11 (1.23)	--	.19 (3.88)
Age	--	--	-.01 (-.46)	--	-.01 (-.35)	--	-.01 (-.57)
Education level	--	--	.10 (1.20)	--	-.12 (-.58)	--	.13 (1.40)
Decision Attractions - Wife (W_{DA})							
Family, friends	--	--	.45 (3.60)	--	-.03 (-.17)	--	.51 (3.37)
Husband's income	--	--	.61 (2.15)	--	.32 (.99)	--	.94 (2.24)
Climate, geography	--	--	-.11 (-.42)	--	.24 (.61)	--	-.13 (-.35)
Raised in such community	--	--	.09 (.32)	--	-.01 (.00)	--	.47 (1.10)
Husband's desires, career	--	--	.07 (.30)	--	-.32 (-.73)	--	.28 (.77)
Own career	--	--	1.05 (2.32)	--	.82 (.75)	--	1.20 (2.20)
Continuing education	--	--	-.20 (-.62)	--	-.26 (-.40)	--	.04 (.10)
Community recruitment	--	--	.04 (.10)	--	-.58 (-.65)	--	-.41 (-.59)
Social life	--	--	.48 (1.34)	--	.18 (.22)	--	.80 (1.75)
Recreation, sports	--	--	-.13 (-.51)	--	-.57 (.95)	--	-.03 (-.10)
Shopping	--	--	.69 (1.30)	--	.27 (.22)	--	.60 (.98)
Education system	--	--	.60 (2.19)	--	.59 (1.21)	--	.55 (1.37)
Influential in community	--	--	-.62 (-1.52)	--	-.78 (-.85)	--	-.28 (-.37)
Transportation	--	--	.68 (1.07)	--	1.35 (.94)	--	.93 (1.26)
Cultural advantages	--	--	.93 (3.13)	--	.89 (1.50)	--	1.19 (2.91)
Prosperity of community	--	--	-.16 (.42)	--	-.79 (-1.03)	--	.13 (.26)
Preference urban/rural	--	--	-.40 (-1.52)	--	-.39 (.85)	--	-.39 (-.98)
Constant	3.618		2.732	1.782	1.904	4.453	2.912
R^2	.338		.485	.359	.487	.266	.549
F	17.18		7.81	6.82	2.41	7.42	6.24
df	31, 1043		51, 433	31, 378	50, 127	31, 633	50, 256
Adj. R^2	.319		.429	.310	.342	.232	.474

[a] Each column represents a separate regression equation; each row contains the regression coefficients, and their corresponding values in parentheses, for a particular independent variable.

[b] The omission of a particular variable in any regression is indicated by "--" in the table.

[c] The coefficient represents error in the measurement of marital status. Only physicians with corresponding wife responses were used; i.e., no physician in the sample used should be "not married."

Appendix D

FOLLOW-UP SURVEY--UCR

Appendix D

FOLLOW-UP SURVEY OF 1965 MEDICAL SCHOOL GRADUATES -- UCR

THE RAND CORPORATION
1700 Main Street, Santa Monica, Calif. 90406

1. When you selected your current practice location, you probably considered several factors. Please select the statement below that comes closest to the way you felt.
   a. I decided I wanted to practice in a metropolitan rather than a nonmetropolitan area. ☐ 13-1
   b. I picked my practice location primarily for reasons other than its being a metropolitan rather than a nonmetropolitan area. ☐ SKIP TO BOX C 13-2

2. Did you choose a metropolitan location because:
   a. Generally there are more advantages in metropolitan areas? ☐ → TO BOX A 14-1
   b. Generally there are too many disadvantages in nonmetropolitan areas? ☐ → TO BOX B 14-2
   c. A combination of "a" and "b"? ☐ → TO BOXES A & B 14-3

BOX A

If you answered "a" or "c" to question 2, please check any of the factors listed below that were important in attracting you to a metropolitan area.

- a. Higher population density ☐ 15
- b. More comfortable with metropolitan life style and environment ☐ 16
- c. Spouse's preference for metropolitan living ☐ 17
- d. Accessibility to cultural activities ☐ 18
- e. Ability to limit practice to a specialty ☐ 19
- f. Accessibility to academic medical center ☐ 20
- g. Opportunity for regular contact with other physician ☐ 21
- h. Anticipated higher income ☐ 22
- i. Other (*specify* _____) ☐ 23

Go to box B

BOX B

If you answered "b" or "c" to question 2, please check any of the factors listed below that were important in deterring you from nonmetropolitan areas; otherwise, skip to question 3.

- a. Poor quality education system for children ☐ 24
- b. Uncomfortable with nonmetropolitan life style and environment ☐ 25
- c. Spouse's aversion to nonmetropolitan areas ☐ 26
- d. Anticipated workload too great ☐ 27
- e. Inadequate contact with medical school ☐ 28
- f. Lack of opportunity for adequate continuing education ☐ 29
- g. Lack of adequate hospital facilities ☐ 30
- h. Influence of medical school training ☐ 31
- i. Possibility of lower professional status ☐ 32
- j. Possibility of professional isolation ☐ 33
- k. Other (*specify* _____) ☐ 34

Skip to question 3

BOX C

Listed below are factors said to be important when a physician decides where to practice. Check any that were important to you in choosing one location over others.

- a. Opportunity to enter an established solo practice ☐ 35
- b. Opportunity to join a desirable two-person partnership ☐ 36
- c. Opportunity to join a desirable group practice ☐ 37
- d. Recruitment efforts of the community ☐ 38
- e. Preferable climate ☐ 39
- f. Preferable geographic features ☐ 40
- g. Nearness to family and friends ☐ 41
- h. Same as or similar to the community in which you grew up ☐ 42
- i. Preference of spouse ☐ 43
- j. Quality of education system for your children ☐ 44
- k. Availability of emergency medical services ☐ 45
- l. Hospital facilities nearby ☐ 46
- m. Availability of physician specialists ☐ 47
- n. Access to medical school programs ☐ 48
- o. Access to continuing medical education (other than medical school programs) ☐ 49
- p. Income potential ☐ 50
- q. Other (*specify* _____) ☐ 51

3. When you decided on your present practice location, did you consider any nonmetropolitan locations?
   a. YES ☐ 52-1 ↓
   b. NO ☐ 52-2

   If YES, did you visit any of these nonmetropolitan communities before you made your decision?
   a. YES ☐ 53-1
   b. NO ☐ 53-2

4. In your opinion, did your medical school training have an important influence on your choice of the kind of community in which you wanted to practice?

a. YES ☐ 54-1 b. NO ☐ 54-2

If YES, how did it influence you? _____ ☐ 55

5. Do you intend to stay in your present practice location for at least 2 more years?

a. YES ☐ 56-1 b. NO ☐ 56-2

If NO, which of the following factors influenced your decision:

a. Poor quality education system for children ☐ 57-1
b. High crime rate ☐ 57-2
c. Anonymity of urban living ☐ 57-3
d. High level of professional competition ☐ 57-4
e. Lack of ready access to recreational facilities ☐ 57-5
f. High pollution level ☐ 57-6
g. High population density ☐ 57-7
h. Other (*specify* _____) ☐ 57-8

In the previous survey, a group practice opportunity seemed to be an important consideration in some physicians' choice of a practice location. Please answer the following questions concerning group practice. (A group practice is here defined as three or more physicians with a formal financial arrangement.)

6. At the time of your practice location decision, was a desirable group practice opportunity available in the area in which you most wanted to practice?

a. YES ☐ 58-1 b. NO ☐ 58-2

7. Are you currently in a group practice?

a. YES ☐ 59-1 b. NO ☐ 59-2

8. If you were to start your medical practice over again, do you think you would join a group practice?

a. YES ☐ 60-1 b. NO ☐ → End 60-2
c. DON'T KNOW ☐ 60-3

9. What characteristics of a group practice would you find most favorable? *(Check one in each category.)*

I. Size
a. 3–10 physicians ☐ 61-1
b. 11–20 physicians ☐ 61-2
c. 20+ physicians ☐ 61-3
d. Not important ☐ 61-4

II. Type
a. Single specialty ☐ 62-1
b. Multispecialty ☐ 62-2
c. Not important ☐ 62-3

III. Nearness to hospital
a. Within 0–5 minutes of hospital ☐ 63-1
b. Within 5–15 minutes of hospital ☐ 63-2
c. Within 15–30 minutes of hospital ☐ 63-3
d. Not important ☐ 63-4

IV. Other (*specify* _____) ☐ 64

10. In selecting one group practice over others, what *single* characteristic would you find most important?

a. Size ☐ 65-1 c. Nearness to hospital ☐ 65-3
b. Type ☐ 65-2 d. Other (*specify* _____) ☐ 65-4

11. In selecting group practice over other practice modes, what single characteristic of a group practice would you find most favorable?

a. Peer support ☐ 66-1 e. Lower individual start-up costs ☐ 66-5
b. Scheduled free time ☐ 66-2 f. Opportunity for team medical practice ☐ 66-6
c. Less administrative responsibility ☐ 66-3 g. Other (*specify* _____) ☐ 66-7
d. Provision of better quality of care ☐ 66-4

Thank you for your participation in this survey. Please place your questionnaire in the return envelope and mail it as soon as possible. We appreciate your cooperation.

Appendix E

FOLLOW-UP SURVEY--R

Appendix E

FOLLOW-UP SURVEY OF 1965 MEDICAL SCHOOL GRADUATES -- R

THE RAND CORPORATION
1700 Main Street, Santa Monica, Calif. 90406

1. When you selected your current practice location, you probably considered several factors. Please select the statement below that comes closest to the way you felt.
   a. I decided I wanted to practice in a nonmetropolitan rather than a metropolitan area. ☐ 13-1
   b. I picked my practice location primarily for reasons other than its being a nonmetropolitan rather than a metropolitan area ☐ → SKIP TO BOX C 13-2

2. Did you choose a nonmetropolitan location because:
   a. Generally there are more advantages in nonmetropolitan areas? ☐ → TO BOX A 14-1
   b. Generally there are too many disadvantages in metropolitan areas? ☐ → TO BOX B 14-2
   c. A combination of "a" and "b"? ☐ → TO BOXES A & B 14-3

BOX A

If you answered "a" or "c" to question 2, please check any of the factors listed below that were important in attracting you to a nonmetropolitan area.

a. Lower population density ☐ 15
b. More comfortable with nonmetropolitan life style and environment ☐ 16
c. Spouse's preference for nonmetropolitan living ☐ 17
d. High medical need in area ☐ 18
e. Recreation and sports ☐ 19
f. Potential for high initial income ☐ 20
g. Better education for the children ☐ 21
h. Other (*specify* _____) ☐ 22

Go to box B

BOX B

If you answered "b" or "c" to question 2, please check any of the factors listed below that were important in deterring you from a metropolitan area; otherwise skip to question 3.

a. High crime rate ☐ 23
b. Uncomfortable with metropolitan life style and environment ☐ 24
c. Number of physicians already there ☐ 25
d. Higher cost of living ☐ 26
e. Spouse's aversion to metropolitan areas ☐ 27
f. Other (*specify* _____) ☐ 28

Skip to question 3

BOX C

Listed below are factors said to be important when a physician decides where to practice. Check any that were important to you in choosing one location over others.

a. Opportunity to enter an established solo practice ☐ 35
b. Opportunity to join a desirable two-person partnership ☐ 36
c. Opportunity to join a desirable group practice ☐ 37
d. Recruitment efforts of the community ☐ 38
e. Preferable climate ☐ 39
f. Preferable geographic features ☐ 40
g. Nearness to family and friends ☐ 41
h. Same as or similar to the community in which you grew up ☐ 42
i. Preference of spouse ☐ 43
j. Quality of education system for your children ☐ 44
k. Availability of emergency medical services ☐ 45
l. Hospital facilities nearby ☐ 46
m. Availability of physician specialists ☐ 47
n. Access to medical school programs ☐ 48
o. Access to continuing medical education (other than medical school programs) ☐ 49
p. Income potential ☐ 50
q. Other (*specify* _____) ☐ 51

3. When you decided on your present practice location, did you consider any metropolitan locations?
   a. YES ☐ 52-1 → b. NO ☐ 52-2

   If YES, did you visit any of these metropolitan communities before you made your decision?
   a. YES ☐ 53-1 b. NO ☐ 53-2

4. In your opinion, did your medical school training have an important influence on your choice of the kind of community in which you wanted to practice?

a. YES ☐ 54-1 b. NO ☐ 54-2

If YES, how did it influence you? _____ ☐ 55

5. Do you intend to stay in your present practice location for at least 2 more years?

a. YES ☐ 56-1 b. NO ☐ 56-2

If NO, which of the following factors influenced your decision:

a. Workload too great ☐ 57-1
b. Poor quality education system for children ☐ 57-2
c. Professional isolation ☐ 57-3
d. Lack of predictable free time ☐ 57-4
e. Dissatisfaction with community ☐ 57-5
f. Other (*specify* _____) ☐ 57-6

In the previous survey, a group practice opportunity seemed to be an important consideration in some physicians' choice of a practice location. Please answer the following questions concerning group practice. (A group practice is here defined as three or more physicians with a formal financial arrangement.)

6. At the time of your practice location decision, was a desirable group practice opportunity available in the area in which you most wanted to practice?

a. YES ☐ 58-1 b. NO ☐ 58-2

7. Are you currently in a group practice?

a. YES ☐ 59-1 b. NO ☐ 59-2

8. If you were to start your medical practice over again, do you think you would join a group practice?

a. YES ☐ 60-1 b. NO ☐ → End 60-2
c. DON'T KNOW ☐ 60-3

9. What characteristics of a group practice would you find most favorable? *(Check one in each category.)*

I. Size
- a. 3–10 physicians ☐ 61-1
- b. 11–20 physicians ☐ 61-2
- c. 20+ physicians ☐ 61-3
- d. Not important ☐ 61-4

II. Type
- a. Single specialty ☐ 62-1
- b. Multispecialty ☐ 62-2
- c. Not important ☐ 62-3

III. Nearness to hospital
- a. Within 0–5 minutes of hospital ☐ 63-1
- b. Within 5–15 minutes of hospital ☐ 63-2
- c. Within 15–30 minutes of hospital ☐ 63-3
- d. Not important ☐ 63-4

IV. Other (*specify* _____) ☐ 64

10. In selecting one group practice over others, what *single* characteristic would you find most important?

a. Size ☐ 65-1
b. Type ☐ 65-2
c. Nearness to hospital ☐ 65-3
d. Other (*specify* _____) ☐ 65-4

11. In selecting group practice over other practice modes, what single characteristic of a group practice would you find most favorable?

a. Peer support ☐ 66-1
b. Scheduled free time ☐ 66-2
c. Less administrative responsibility ☐ 66-3
d. Provision of better quality of care ☐ 66-4
e. Lower individual start-up costs ☐ 66-5
f. Opportunity for team medical practice ☐ 66-6
g. Other (*specify* _____) ☐ 66-7

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